

2004 ANNUAL REPORT ON  
NATIONAL AIR MONITORING STATIONS (NAMS)  
AND  
STATE AND LOCAL AIR MONITORING STATIONS (SLAMS)

AND

2004 LOUISIANA AMBIENT AIR MONITORING NETWORK  
ASSESSMENT



Louisiana Department of Environmental Quality  
Office of Environmental Assessment  
Air Quality Assessment Division  
Air Analysis Section

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## **Louisiana NAMS/SLAMS Network Overview**

The Louisiana Department of Environmental Quality's (LDEQ) Air Analysis Section has operated National Ambient Monitoring Stations (NAMS) and State and Local Ambient Monitoring Stations (SLAMS) as a requirement of the Code of Federal Regulations, Title 40, Part 58. These stations measure ambient air concentrations of those pollutants for which standards have been established in 40 CFR Part 50. Conformance of the network to Appendix D (Network Design Criteria) and Appendix E (Probe and Path Siting Criteria) is determined using an Annual Review of the air quality surveillance system which states are required to provide for in 40 CFR 58.20 (d). This review has several goals:

- Determine how well the network is achieving its required air monitoring objectives
- Determine how well the network is meeting the needs of the data users
- Determine how (if) the network should be modified to continue to meet its monitoring objective and data needs (through termination of existing stations, relocation of stations, or establishment of new stations)
- Investigate ways to improve the network to ensure that it provides adequate, representative and useful air quality data.

The LDEQ currently operates 28 ozone monitors, 19 FRM PM<sub>2.5</sub> samplers, 7 TEOM PM<sub>2.5</sub> samplers and 2 PM<sub>2.5</sub> chemical speciation samplers, 12 nitrogen oxides monitors, 6 sulfur dioxide monitors, 3 carbon monoxide monitors, and 6 PM<sub>10</sub> monitors. Please refer to Table 1 for a list of all sites and parameters. Figure 1 shows the geographical location of the sites. During 2004, Louisiana's NAMS/SLAMS network experienced only minor changes, these changes occurred at the Hammond, Vinton and Westlake sites. At the Hammond site (AQS # 221050001), one PM<sub>2.5</sub> collocated sampler was installed to comply with EPA's recommendation

on the number of collocated samplers needed in a particular state. The number of monitors required in Louisiana increased to five. The NO<sub>x</sub> analyzer at Vinton was shut down at the end of 2004 and was setup at Westlake in early 2005.

**Table 1: 2004 Louisiana Ambient Air Monitoring Sites**

CITY SITE NAME ADDRESS AQS CODE	PARISH	CO	NO <sub>x</sub>	O <sub>3</sub>	SO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	TSP	MET	VOCs
ALEXANDRIA 8105 Tom Bowman Dr. 220790002	Rapides						SLAMS			
ARABI St. Bernard Sch. Board Mehle Avenue 220870002	St. Bernard			SLAMS	SLAMS					
BAKER LTI Highway 964 220331001	East Baton Rouge		SPMS	NAMS			SPMS		*	SPMS *
BATON ROUGE Capitol Site 1061-A Leesville Ave 220330009	East Baton Rouge	SLAMS	SLAMS	NAMS	NAMS		SLAMS		PAMS	PAMS
BATON ROUGE (Deactivated 12/2003) Evangeline Fire Station 3142 Evangeline St. 220330002	East Baton Rouge					NAMS	SLAMS			
BATON ROUGE LSU East End Aster Lane 220330003	East Baton Rouge		SPMS	SLAMS					*	SPMS *
BAYOU PLAQUEMINE Bayou Plaquemine 65180 Belleview Road 220470009	Iberville		SPMS	SPMS			SLAMS		PAMS	PAMS
BENTLEY Kisatche National Forest Highway 8 220430001	Grant			SLAMS						
CARLYSS Ellender Site Hwy 28 & Hwy 108 220190002	Calcasieu			SLAMS						
CARVILLE USPHS Hospital Hwy 75 220470012	Iberville		SPMS	SLAMS					*	SPMS *
CONVENT St. James Courthouse La Hwy 44 @ Canatella 220930002	St. James			SLAMS						
DIXIE KEEL Radio Station Haygood Road 220170001	Caddo			NAMS						
DUTCHTOWN Dutchtown 11153 Kling Road 220050004	Ascension			SPMS					*	SPMS *

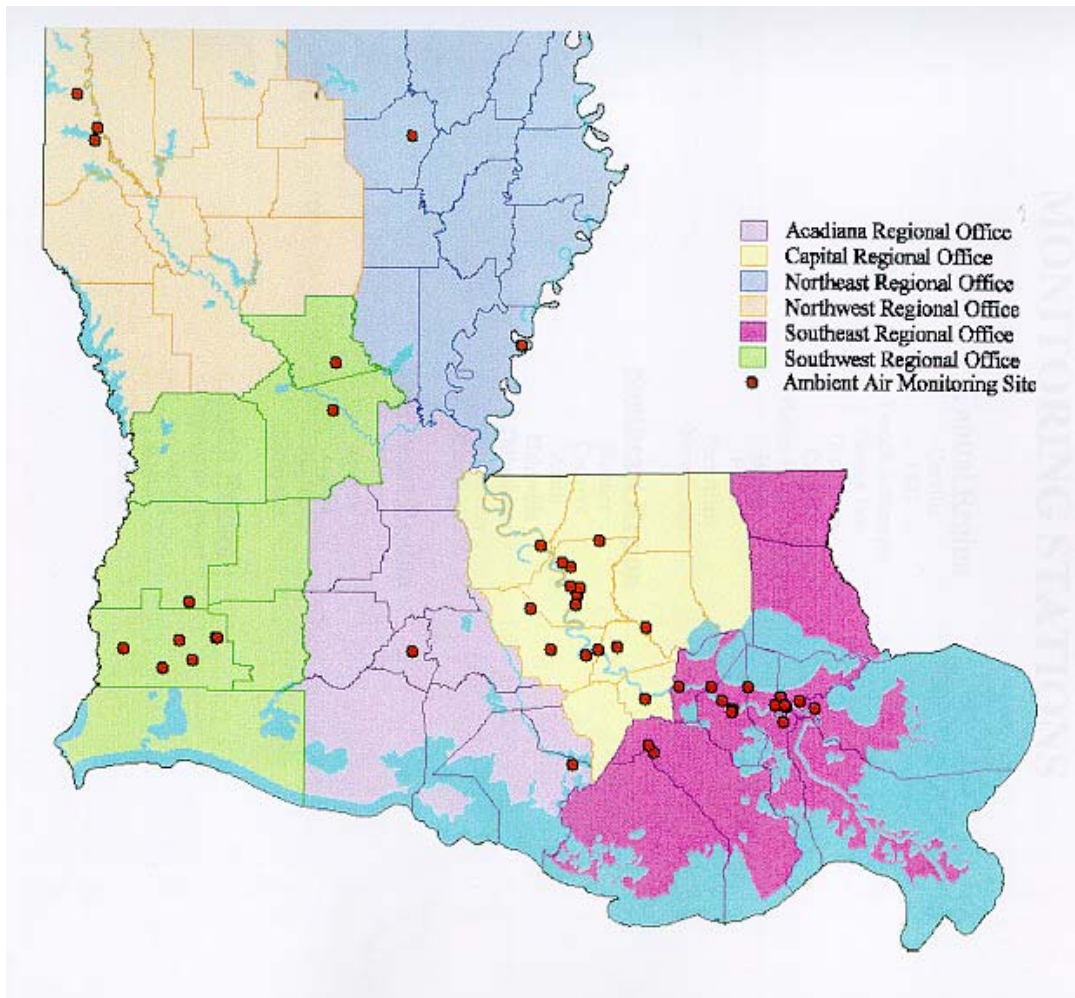
CITY SITE NAME ADDRESS AQS CODE	PARISH	CO	NO <sub>x</sub>	O <sub>3</sub>	SO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	TSP	MET	VOCs
FRENCH SETTLEMENT French Settlement Highway 16 220630002	Livingston		SPMS	SPMS			SPMS		*	SPMS *
GARYVILLE Elementary School Azale & S. Apricot 220950002	St. John the Baptist			SLAM						
GEISMAR Highway 75 220470005	Iberville						SLAMS			
GROSSE TETE Grosse Tete Highway 77 220470007	Iberville		SPMS	SPMS					*	SPMS *
HAMMOND 21549 Old Covington Hwy 221050001	Tangipahoa						SLAMS			
HAHNVILLE River Park Apartment 1 River Park Drive 220890003	St. Charles			SLAM						
HOUMA P.O. Box 1330 Gray, LA 70359 221090001	Terrebonne						SLAMS			
KENNER L P & L Powerline West Temple Pl 220511001	Jefferson		NAMS	NAMS			SLAMS			
LAFAYETTE State Police Troop I 121 E. Pont Des Mouton Lafayette, LA 220550006	Lafayette						SLAMS			
LAFAYETTE USL 208 Devalcourt St. 220550005	Lafayette			SPMS		SLAMS	SLAMS			
LAKE CHARLES McNeese University Ryan & McNeese 220190010	Calcasieu						SLAMS			
LULING Luling River Rd @ Sugar Rd. 220890005	St. Charles					SPMS		SPMS		
MARRERO Patriot & Allo St. 220512001	Jefferson						SPMS			
MERAUX 2829 Nunez St 220870004	St. Bernard						SLAMS			
MONROE Airport Station 5296 Southwest Road 220730004	Ouachita			SLAM	SLAMS		SLAMS			
MORGAN CITY St. Mary's Par. Sheriff 1300 Lakewood Drive 221010003	St. Mary			SLAMS						
NEW ORLEANS City Park Florida & Orleans Ave 220710012	Orleans	NAMS	NAMS	NAMS		NAMS	SLAMS			
NEW ORLEANS Tulane Medical Center 1430 Tulane Avenue 220710017	Orleans	NAMS								

CITY SITE NAME ADDRESS AQS CODE	PARISH	CO	NO <sub>x</sub>	O <sub>3</sub>	SO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	TSP	MET	VOCs
NEW ORLEANS Water Purification Plt 8801 Eagle Street 220710010	Orleans					NAMS	SLAMS			
NEW ROADS Ted Davis' Residence Highway 415 220770001	Pointe Coupee			SLAMS						
PORT ALLEN WLUX Radio Station Highway 1 221210001	West Baton Rouge		SLAMS	SLAMS	SLAMS	NAMS	SLAMS		*	SPMS *
PRIDE Pride Port Hudson Road 220330013	East Baton Rouge		SPMS	SPMS			SPMS		PAMS	PAMS
RAGLEY Transco Pipeline Highway 171 220110002	Beauregard			SLAMS						
SHREVEPORT Airport Station Airport Drive 220150008	Bossier			NAMS	SLAMS		SPMS			
SHREVEPORT Claiborne Claiborne St. 220171002	Caddo					NAMS	SLAMS			
THIBODAUX 194 Thoroughbred Park Dr. Thibodeaux, LA 220570004	Lafourche			SLAMS			SPMS			
VIDALIA 2005 Billy Deal Lane 220290003	Concordia						SPMS			
VINTON Vinton 5806 Lisa Lane 220190009	Calcasieu		SPMS	SPMS			SLAMS		*	
WESTLAKE Westlake 2646 John Stine Rd. 220190008	Calcasieu			SLAMS	SLAMS		SPMS		*	

NAMS - NATIONAL AIR MONITORING STATIONS  
 SLAMS - STATE AND LOCAL AIR MONITORING STATIONS  
 SPMS - SPECIAL PURPOSE MONITORING STATIONS  
 PAMS - PHOTOCHEMICAL ASSESSMENT MONITORING STATIONS  
 NCP - NON- CRITERIA POLLUTANT  
 \* - NOT IN THE AQS DATABASE

LOUISIANA AMBIENT AIR MONITORING SITES SUMMARY										
	CO	NO <sub>x</sub>	O <sub>3</sub>	SO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	TSP	MET	VOCs	
TOTAL	3	12	28	6	6	26	1	12	10	
NAMS	2	2	6	1	4					
SLAMS	1	2	15	5	1	18				
PAMS								3	3	
SPMS	0	8	7	0	1	8	1		7	
NCP							1	9*		

**Figure 1: LOUISIANA AMBIENT AIR MONITORING SITES**



Our analysis of Louisiana's NAMS/SLAMS network began by examining the current criteria pollutants being monitored in the state (ozone, oxides of nitrogen, carbon monoxide, sulfur dioxide, particulate matter), followed by trying to determine what influence those individual pollutants had on the makeup of our network. It quickly became apparent that Louisiana's network is driven by a goal of determining the status of the pollutant ozone in several key cities and the pre-cursor pollutants that are associated with it.

The network changes for 2004 are listed below:

- At the end of 2004 NO<sub>x</sub> was shutdown at Vinton and started operating at Westlake.
- Kenner is still trying to be relocated.



- TEOM was added at Capitol in 2005.
- The EPA suggested that SO<sub>2</sub> be discontinued at Monroe and at Arabi due to low concentrations as well as the PM<sub>2.5</sub> at Vidalia. At this time, the Arabi site will continue to monitor SO<sub>2</sub> due to citizen concern in St. Bernard Parish. We are considering discontinuing the SO<sub>2</sub> at Monroe and the PM<sub>2.5</sub> at Vidalia

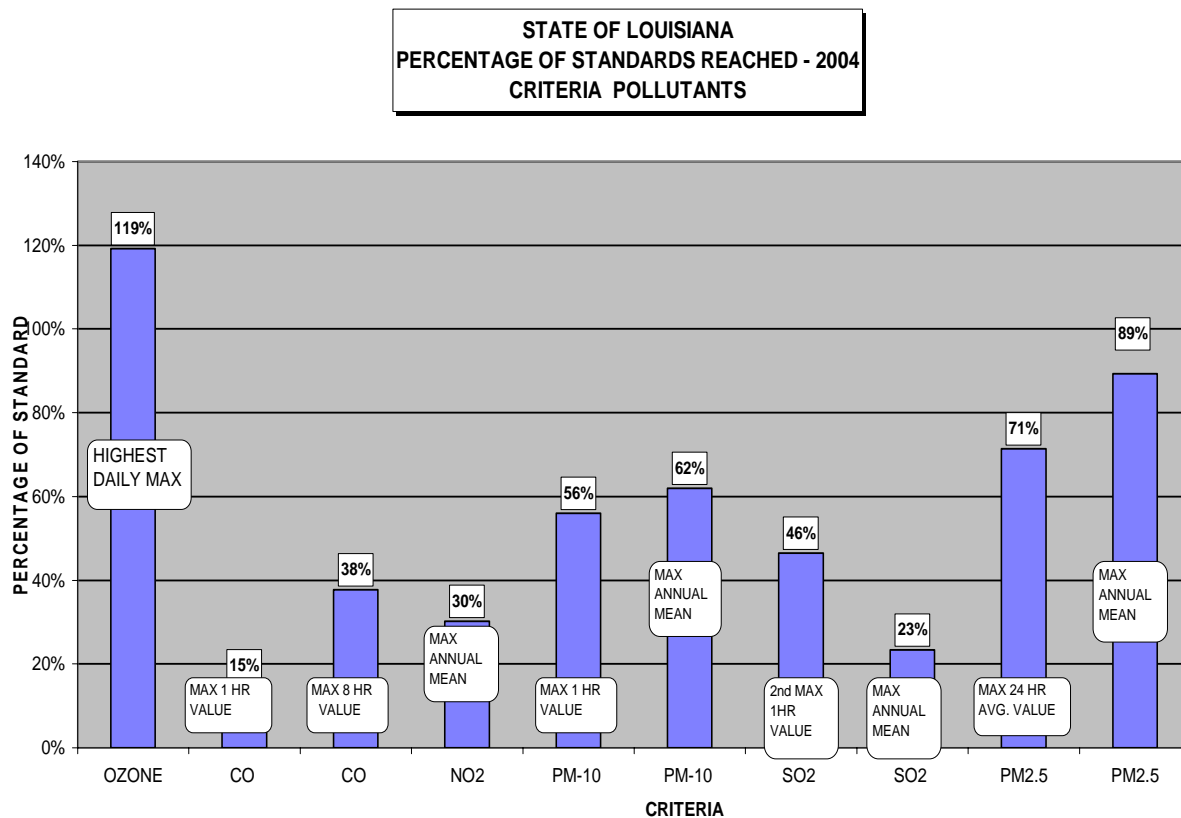
In many instances, criteria pollutants have been determined to appear in small quantities during a carefully observed period of time. When this is the case, the state is no longer obligated to monitor the air for those particular pollutants, and the instruments measuring them can be shut down. The remaining monitors appropriately evaluate the status of sulfur dioxide, carbon monoxide, PM<sub>10</sub> and PM<sub>2.5</sub>. Moreover, the network covers ozone “hot spots” extremely well. With 10 ozone monitors in the Baton Rouge 5 parish area, we have been able to demonstrate that the data we receive hourly from these sites is representative of the overall air quality in the area. A look at the proximities of the monitors (Figure 2) and the relative closeness of the concentrations can show the area is well represented.

**Figure 2: OZONE MONITORS IN THE BATON ROUGE AREA**



Figure 3 shows statewide criteria pollutant concentrations as a percentage of the National Ambient Air Quality Standard (NAAQS) for 2004. Since the 1-hr ozone NAAQS is still being enforced in the five-parish Baton Rouge Non-Attainment area, ozone was the only criteria pollutant that exceeded the NAAQS during 2004. During this period, there were 4 exceedance days in the 5-parish area. The exceedances occurred at the Baker, Capitol, Carville, Port Allen and LSU sites. The highest concentration reached was 149 ppb at LSU and at Port Allen. Two sites have 8 hour design values over the NAAQS. They are LSU with a design value of 89 ppb and Baker with a design value of 86 ppb. For more detailed information on all exceedances please refer to Tables 3 and 4 in the following section.

**Figure 3: Percentage of Standards Reached**



Referring to Figure 3, PM<sub>2.5</sub> values reached 89% of the standard in 2004. In summary, the three-year PM<sub>2.5</sub> mean remained below the NAAQS for the period 2002-2004 statewide. The highest

3-year average was  $13.1 \mu\text{g}/\text{m}^3$ , which occurred at the Port Allen site. The three-year 24-hour  $\text{PM}_{2.5}$  concentrations also remained below the NAAQS; with the highest value being  $36.1 \mu\text{g}/\text{m}^3$  at the Capitol site. Statewide, this pollutant showed a downward trend for the period 1999 to 2002. In 2003 increases were seen for average concentrations obtained with both FRM and TEOM samplers during 2002-2003. In 2003, TEOM operating temperatures were adjusted from  $50^\circ\text{C}$  to  $35^\circ\text{C}$ . This temperature change may have resulted in the TEOM and FRM data being more closely matched. In 2003, the statewide annual mean for TEOM was  $11.4 \mu\text{g}$  and for FRM it was  $11.6 \mu\text{g}$  while in 2002 the TEOM annual mean was  $9.2 \mu\text{g}$  and the FRM was  $10.9 \mu\text{g}$ . The data deviated even more in 2001 with the TEOM mean at  $10.1 \mu\text{g}$  and the FRM mean at  $12.3 \mu\text{g}$ . Regarding pollutants other than ozone and  $\text{PM}_{2.5}$ , concentrations remained considerably below the standard for 2004. For more detailed information please refer to each pollutant's individual section in the following pages.

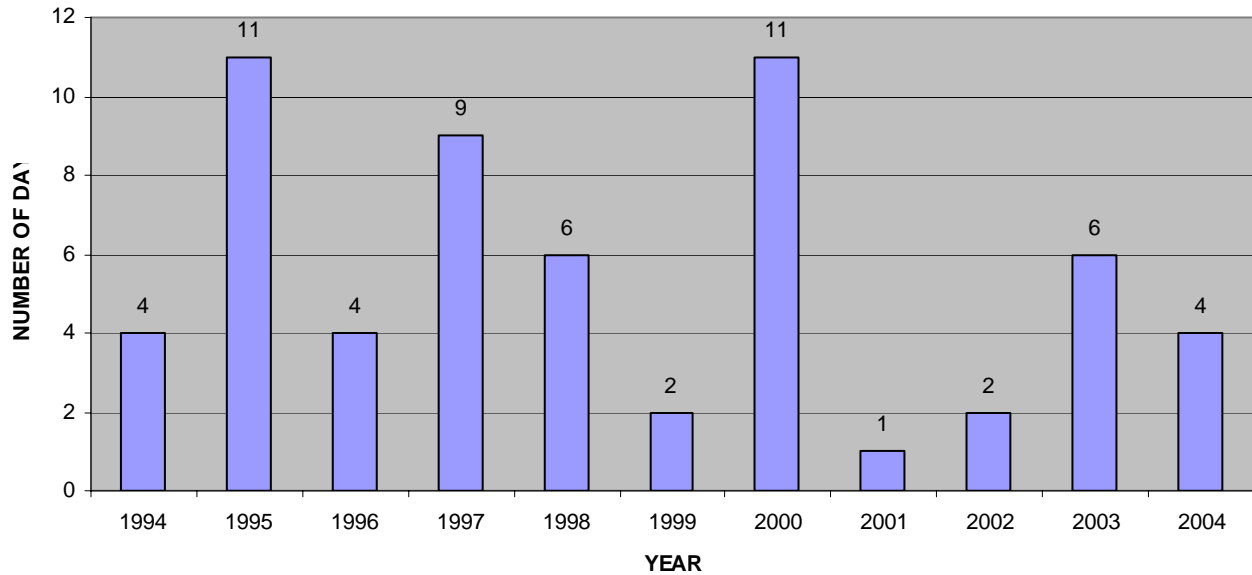
## Ozone

<b>Table 2: Louisiana Ozone Monitoring Stations</b>		
<u><b>Capital Region</b></u> Carville LSU French Settlement Grosse Tete Dutchtown Capitol Bayou Plaquemine Baker Pride Port Allen New Roads Convent	<u><b>Southeast Region</b></u> Kenner Arabi Hahnville Thibodaux Morgan City City Park Garyville  <u><b>Northeast Region</b></u> Bentley Monroe	<u><b>Southwest Region</b></u> Vinton Carlyss Westlake Ragley Lafayette  <u><b>North Region</b></u> Shreveport Airport Dixie

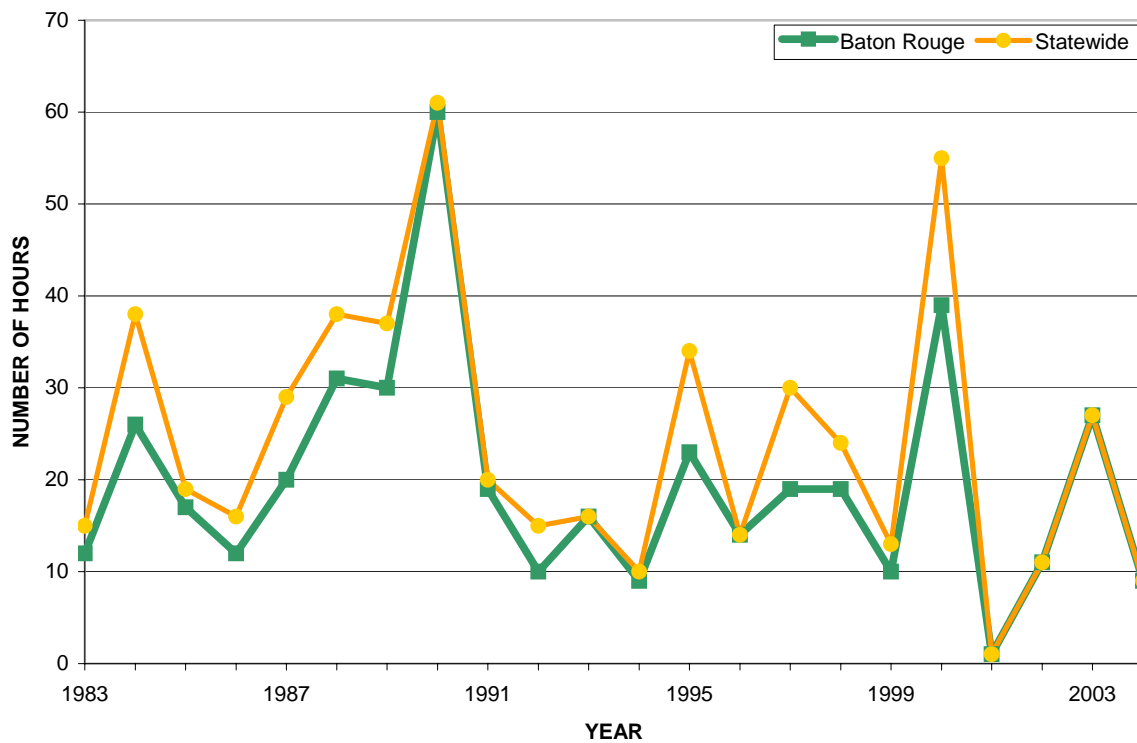
The only region in the state in non-attainment of the ozone 1-hour standard is the five-parish Baton Rouge area. This area covers the parishes of East Baton Rouge, West Baton Rouge, Livingston, Iberville and Ascension. In 1995 the following parishes were re-designated as non-classifiable: Beauregard, Grant, Lafayette, St. Mary, St. James, Orleans, Jefferson, St. Bernard and St. Charles. Point Coupee Parish was re-designated in 1996, Calcasieu in 1997 and Lafourche Parish in 2002.

In the Baton Rouge non-attainment area, there was one exceedance respectively at the Capitol, LSU, Carville, and Port Allen sites, and two exceedances at the Baker site. The highest concentration was reached at the LSU and Port Allen sites at 149 ppb. Table 3 lists all exceedances for 2004 with more detail. Regarding the 1-hr design value (DV), the highest in the 5-parish area was 137 ppb at LSU. In the case of the 8hr NAAQS (see figure 10). For informational purposes, the highest 8hr design value was 89 ppb for EBR.

**Figure 4: NUMBER OF DAYS EXCEEDING 1 HOUR STANDARD BY YEAR  
BATON ROUGE**



**Figure 5: NUMBER OF HOURS EXCEEDING THE OZONE STANDARD IN LOUISIANA**



**Table 3: Ozone 1-HR Average Exceedance Report**

<b>OZONE-1HR AVERAGE EXCEEDANCE REPORT FOR 2004 AS OF 11/30/2004</b>						
<b>CITY/ SITE NAME</b>	<b>DATE</b>	<b>TIME PERIOD (CST)</b>	<b>VALUE PPM</b>	<b>DAILY MAX</b>	<b>TOTAL #HRS. &gt;STD.</b>	<b>TOTAL #DAYS &gt;STD.</b>
Baker	03/20/2004	12-13	0.142	0.142	2	2
	08/18/2004	13-14	0.141	0.141		
Baton Rouge/Capitol	09/29/2004	10-11	0.130	0.130	1	1
Baton Rouge/LSU	09/29/2004	10-11 11-12 12-13	0.149 0.136 0.129	0.149	3	1
Carville	09/29/2004	15-16 16-17	0.126 0.125	0.126	2	1
Port Allen	10/04/2004	10-11 11-12	0.131 0.149	0.149	2	1

**Table 4: Number of Exceedance Days**

Number of Exceedance Days By Monitor By Year																									Avg # of Exec			DV 04
CITY	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	Days/Attain	(PPB)		
Baker	10	3	2	2		2	3	3	3	4	2		3		1		1	1	1	3			1	2	1.0/YES	121		
Capital	4	5	2	5	3	1	5	6	2	7	3	1	1	2	2		2	1		2		2	2	1	1.6/NO	131		
LSU	10	7	2	2	6	2	3	6	5	6	1			2	4	1	1	3		3		1	3	1	1.6/NO	137		
Pride											2				1			1		1			0	0	0.0/YES	111		
Bayou Plaquemine															2		1		1	1	1	1	1	0	0.7/YES	112		
Carville	4	4	4	1	2	3	2	3	5	5	1	2		1	2	2	1	1		1			2	1	1.0/YES	123		
Grosse Tete														1	3	1	3	1	1	2			0	0	0.0/YES	103		
Port Allen				1	2		1	2	3	1	9	3	1	1				2	1	1		1	2	1	1.3/NO	128		
Dutchtown													3	1			2	1		2			0	0	0.0/YES	105		
French Settlement															2	1	2	1		3			0	0	0.0/YES	103		
5 Parish Area	20	14	11	9	8	9	11	13	12	14	8	3	5	4	11	4	8	6	2	11	1	2	6	4				

## MAXIMUM OZONE CONCENTRATIONS BY YEAR STATEWIDE

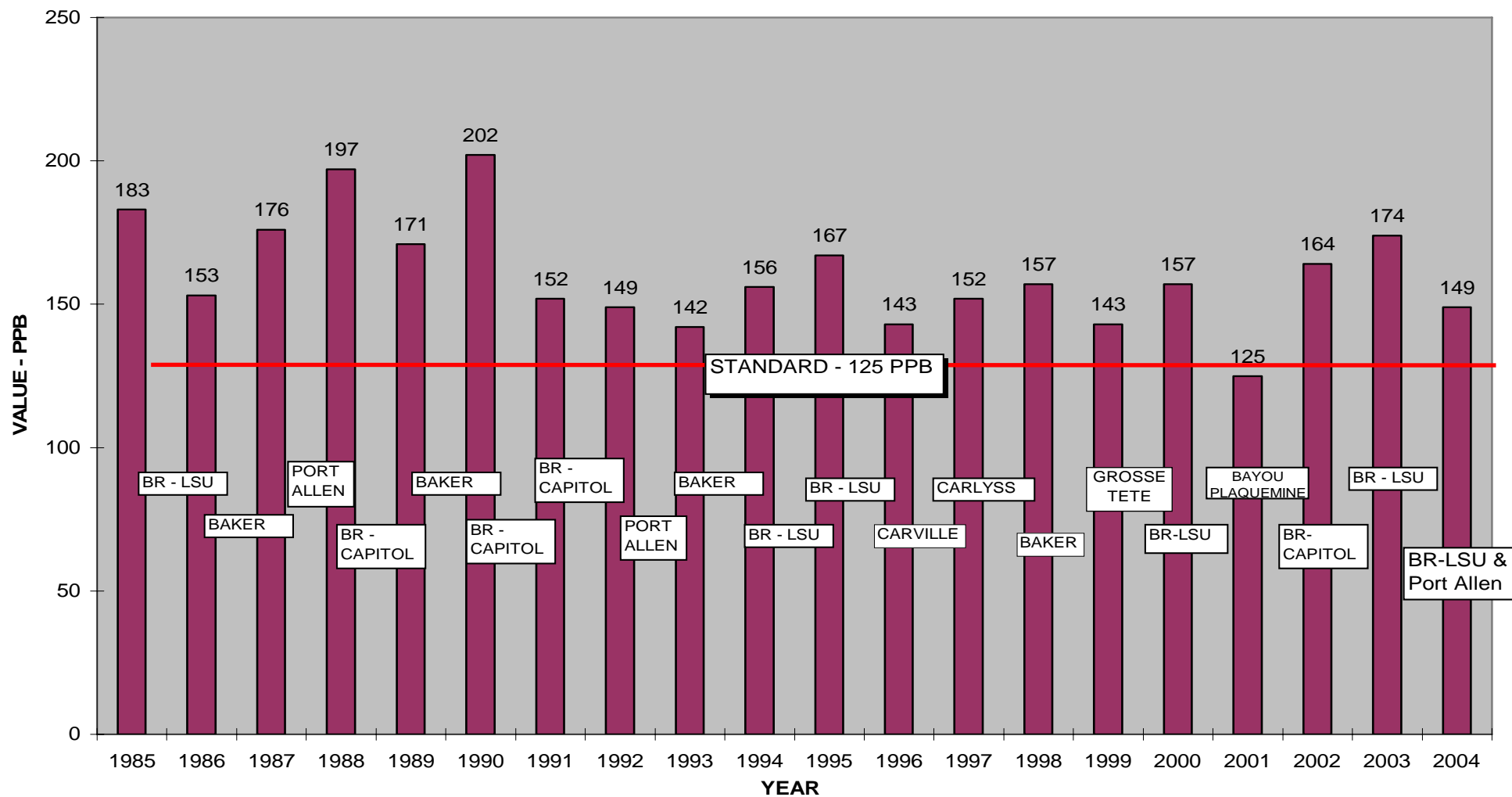
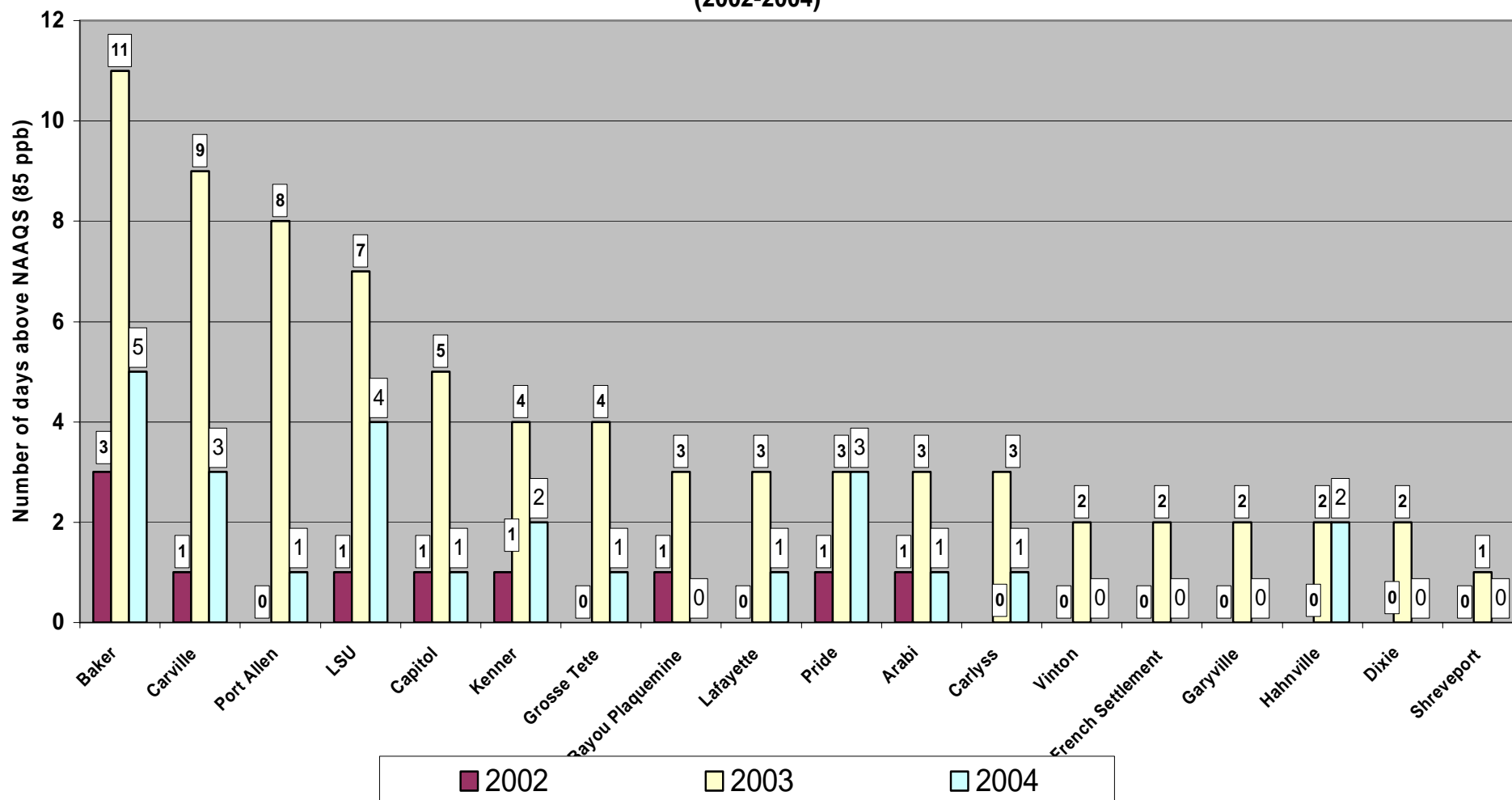


Figure 6: Maximum Ozone Concentrations By Year- Statewide

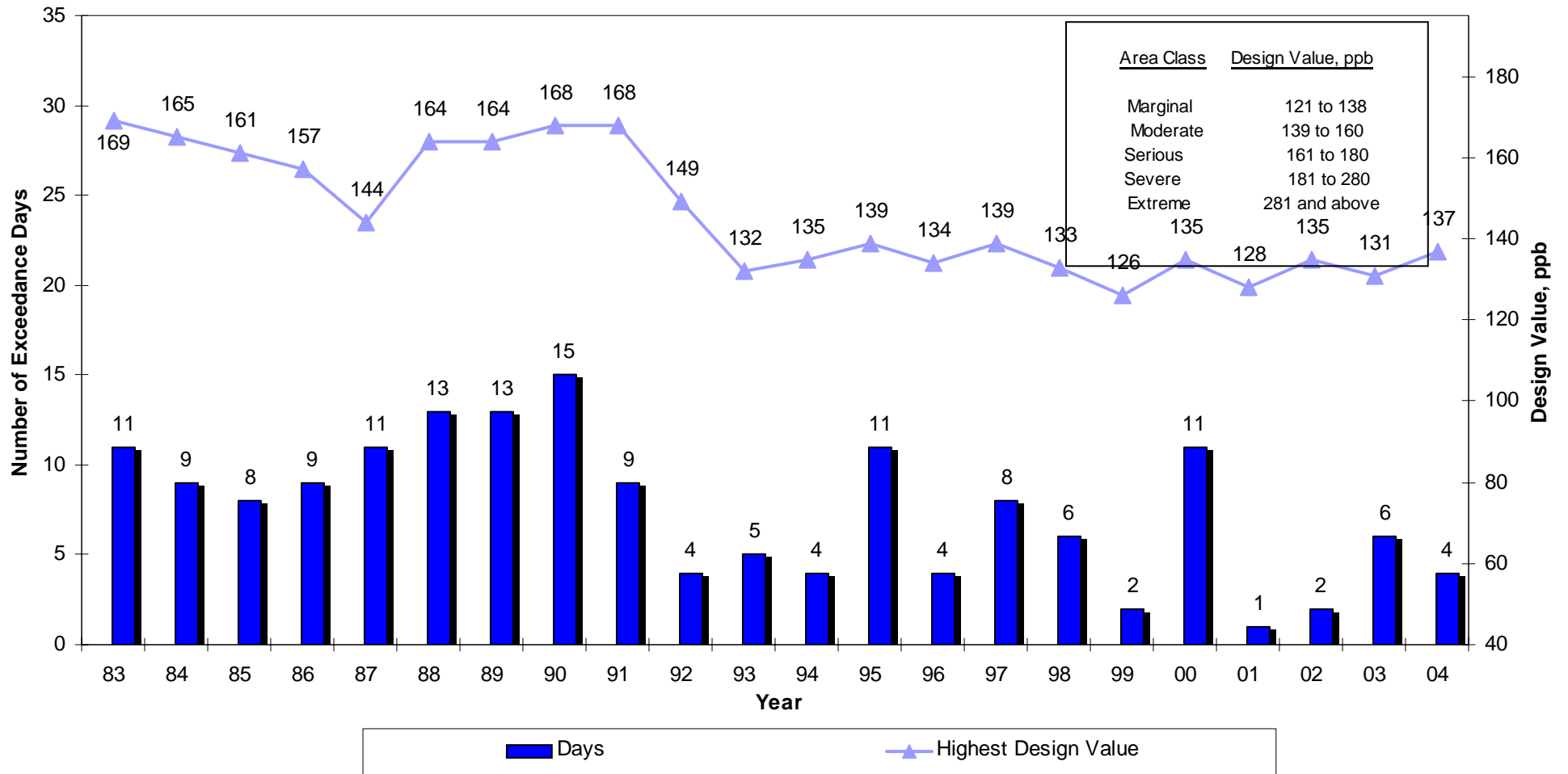


**Ozone 8-Hour Average Trends Summary  
Number of Days Above NAAQS Various Sites  
(2002-2004)**



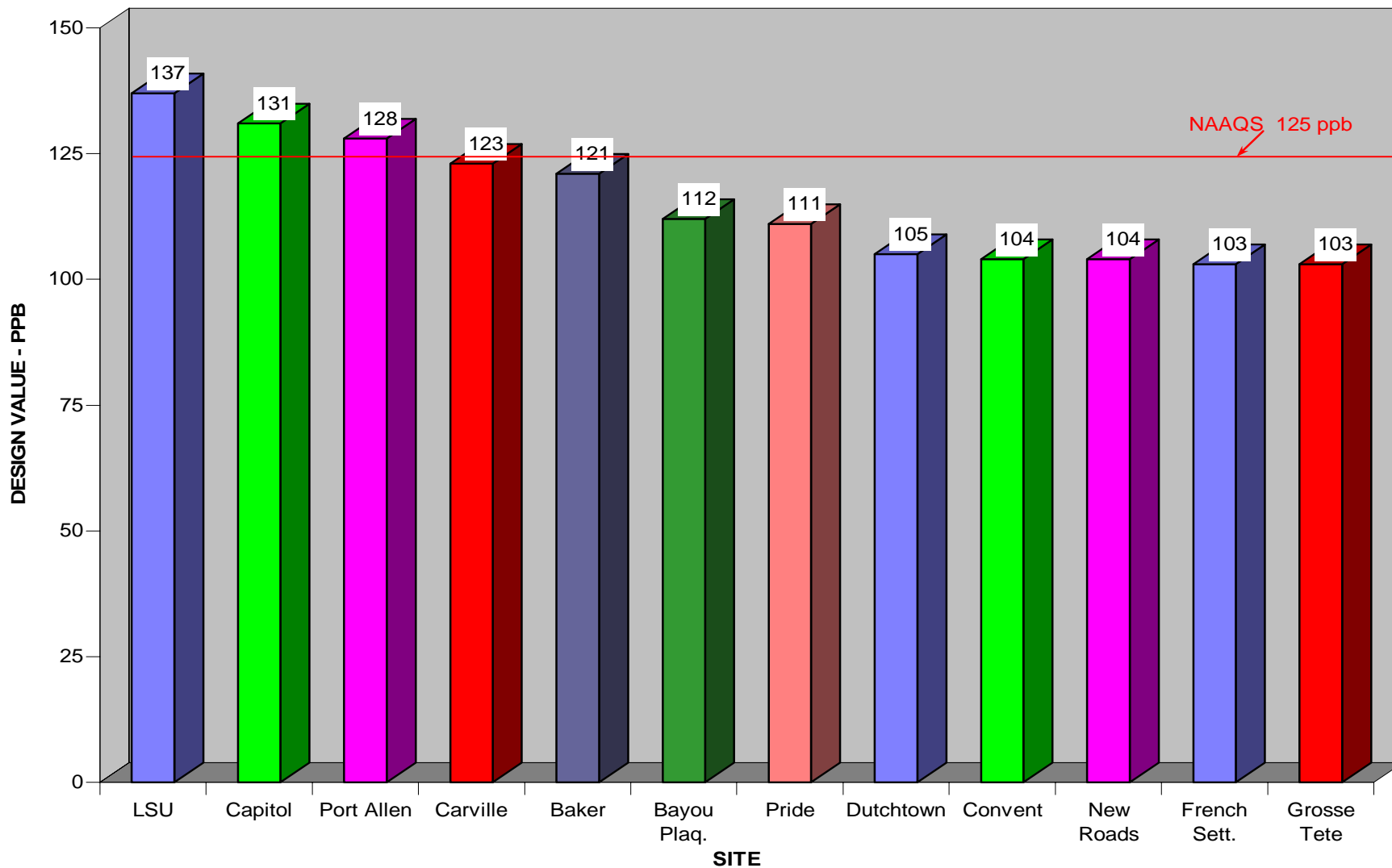
**Figure 7: Ozone 8-Hour Average Trends Summary**

## Baton Rouge Area Ozone Exceedance Days and 1 Hr Design Value



**Figure 8: Baton Rouge Area Ozone Exceedance Days- 1 Hr Design Value**

**2004 OZONE DESIGN VALUES  
NAMS/SLAMS/SPMS SITES  
CAPITAL REGION**



**Figure 9: 2004 1-HR Ozone Design Values- Capitol Region**

## 8-hr Exceedances and Design Values 5-Parish Baton Rouge Area 2002-2004

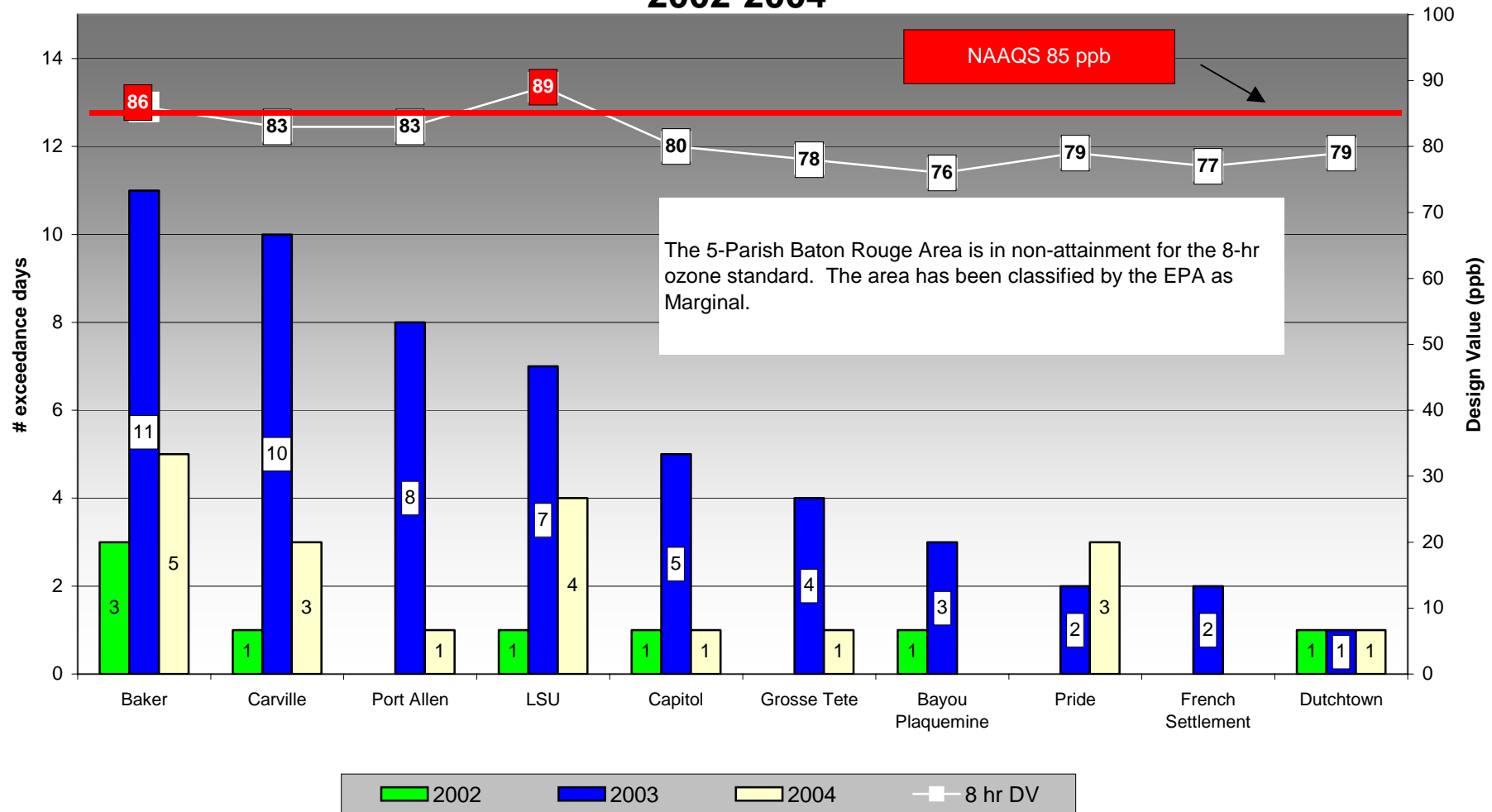
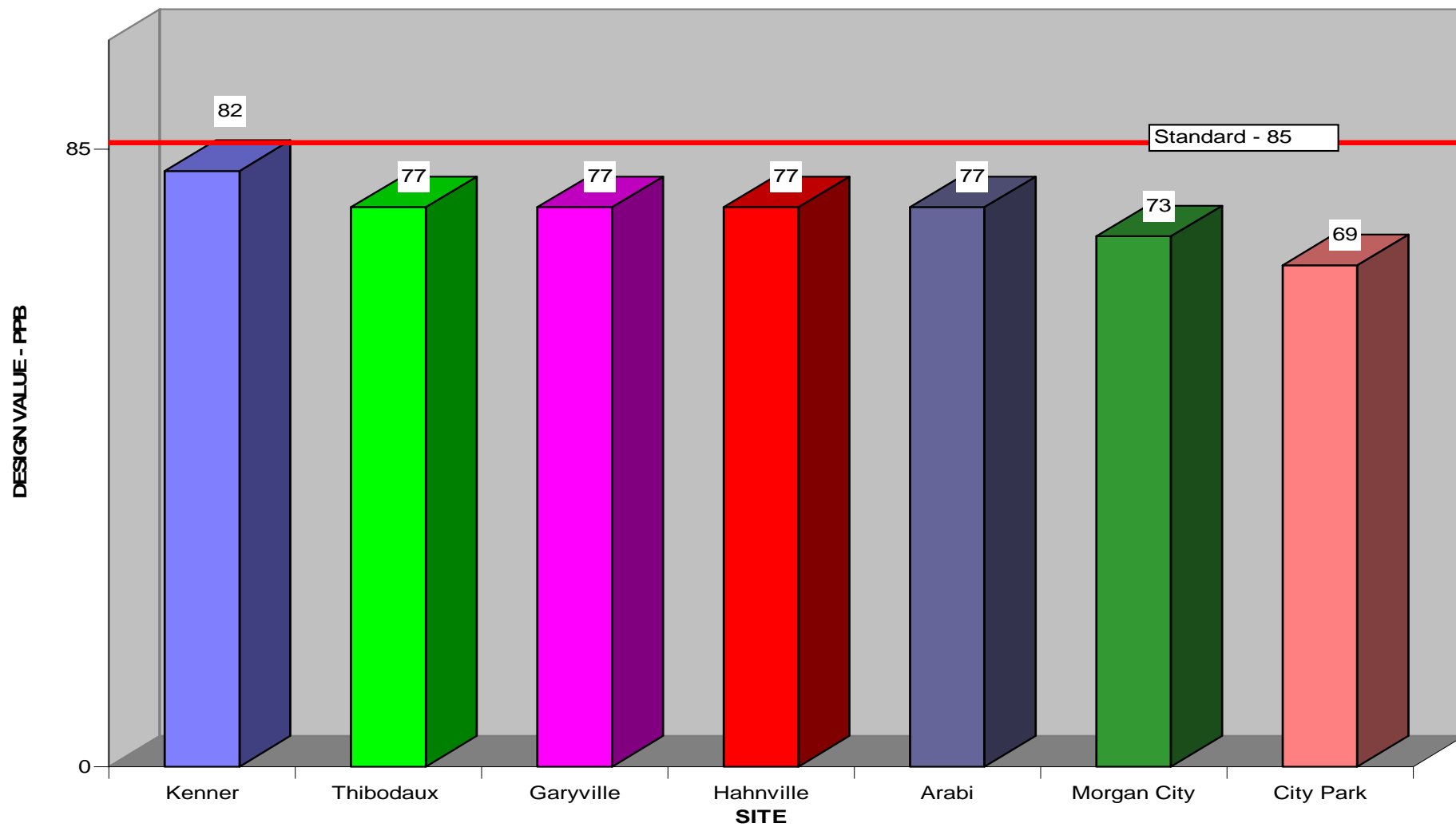


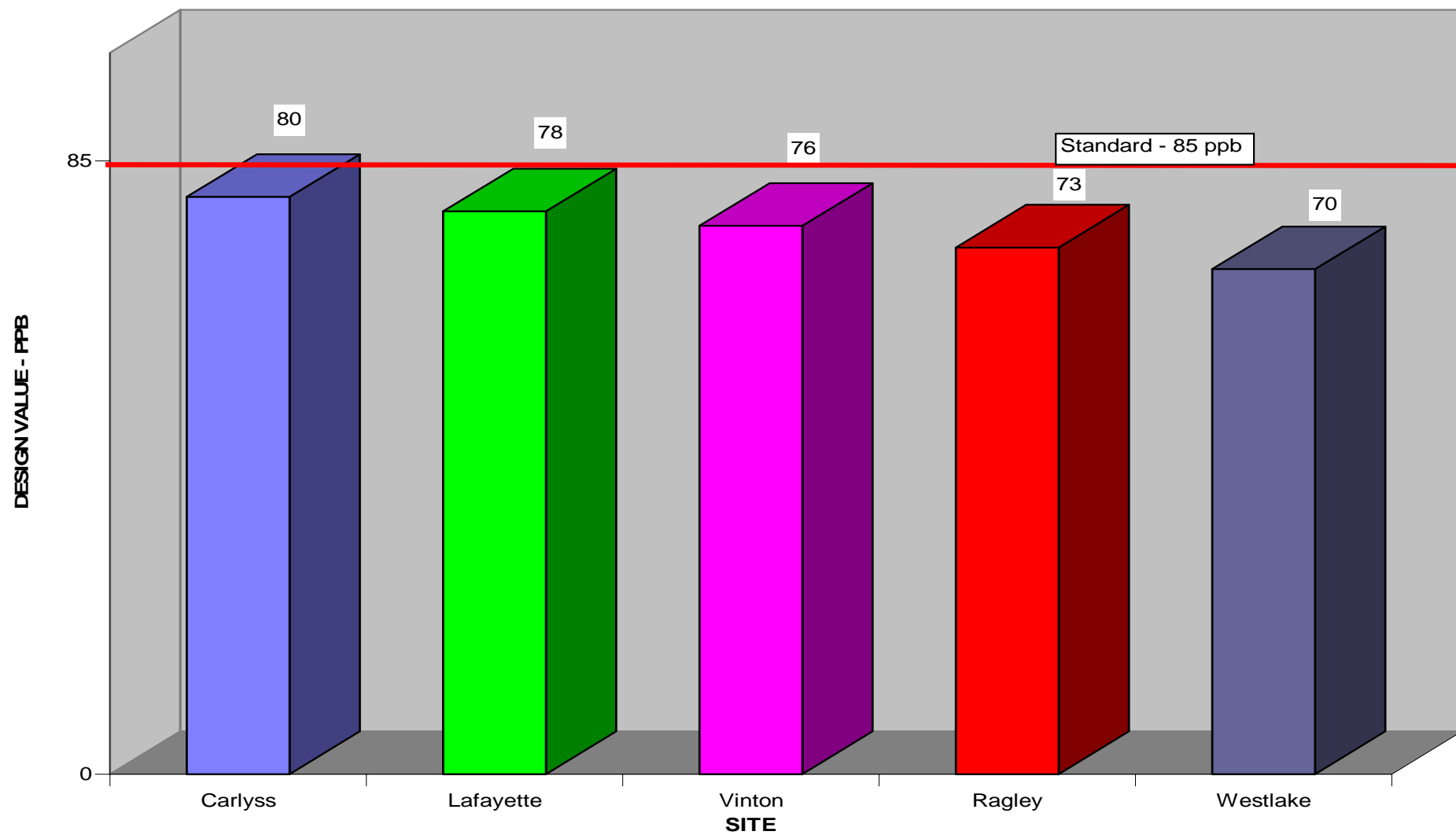
Figure 10: 8-HR Exceedances and Design Value for Baton Rouge Area

**2002-2004 OZONE 8 HOUR AVERAGE of 4TH MAX VALUES  
NAMS/SLAMS/SPMS SITES  
SOUTHEAST REGION**



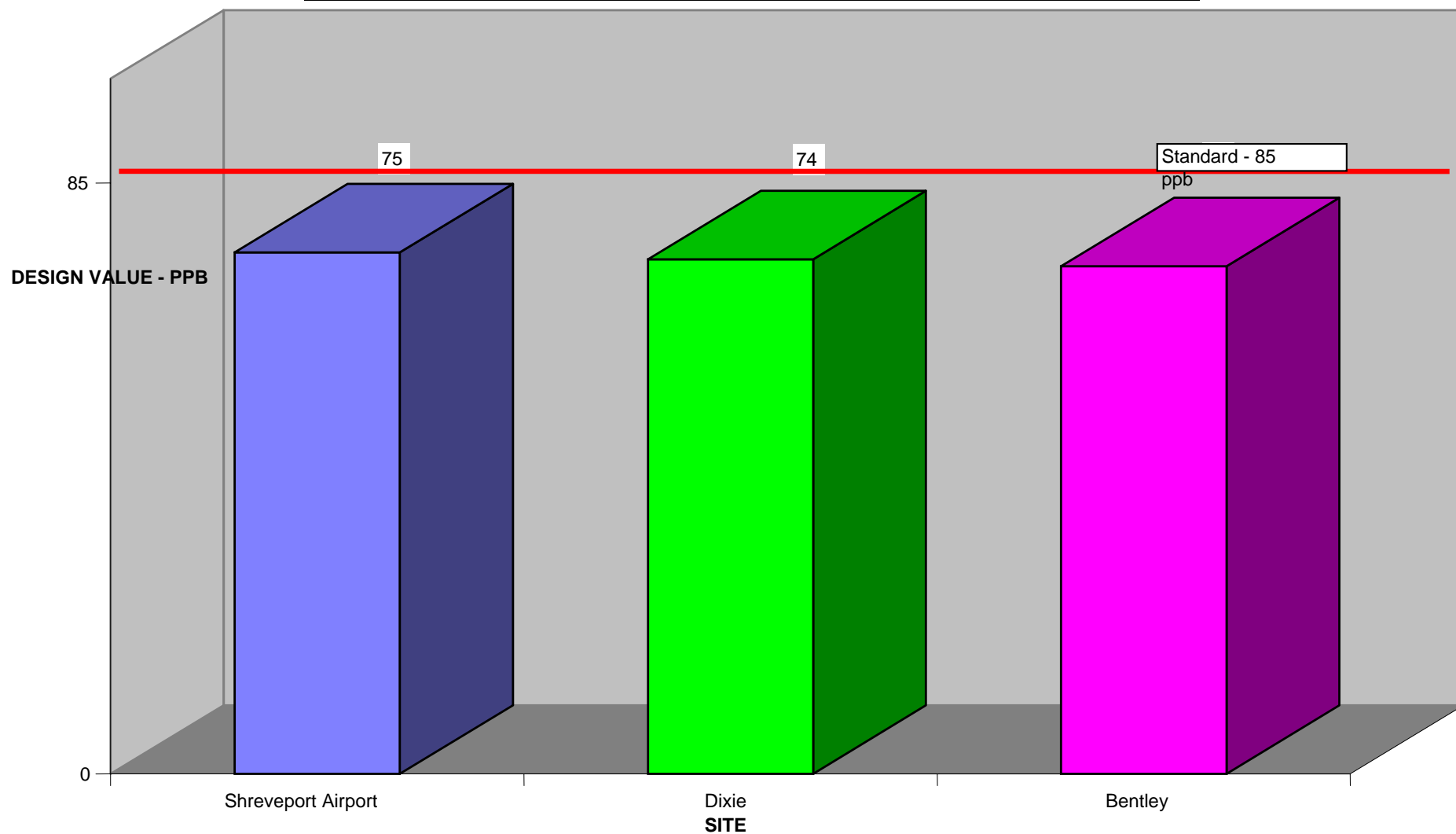
**Figure 11: 2002-2004 8 Hour Average of 4<sup>th</sup> Max- Southeast Region**

**2002-2004 OZONE 8 HOUR AVERAGE of 4TH MAX VALUES  
NAMS/SLAMS/SPMS SITES  
SOUTHWEST REGION**



**Figure 12: 2002-2004 Ozone 8-HR Average of 4<sup>th</sup> Max- Southwest Region**

**2002-2004 OZONE 8 HOUR AVERAGE of 4TH MAX VALUES  
NAMS/SLAMS/SPMS SITES  
NORTHWEST AND CENTRAL REGIONS**



**Figure 13: 2002-2004 Ozone 8-HR Average of 4<sup>th</sup> Max- Northwest and Central Regions**





## Nitrogen Dioxide

Table 5: Louisiana Nitrogen Dioxide Monitoring Stations	
<b><u>Capital Region</u></b> Bayou Plaquemine Baker Capitol Carville French Settlement LSU Grosse Tete Port Allen Pride	<b><u>Southeast Region</u></b> Kenner City Park  <b><u>Southwest Region</u></b> Vinton

Nitrogen dioxides are a prime precursor reactant for ozone. NO<sub>2</sub> reacts with VOCs in the presence of sunlight to form photochemical oxidants. Since the criteria pollutant of most concern in Louisiana is ozone, nitrogen dioxide becomes an evident concern, despite its low concentrations (maximum annual mean value was still only 30% of the NAAQS). Overall there are twelve (12) NO<sub>2</sub> sites in Louisiana, with 4 of them (listed above) as a NAMS or SLAMS.

Nitrogen oxides are formed whenever any fuel is burned in air. Therefore, to observe where this pollutant could impact the most, monitors are needed in areas of large mobile and stationary sources. The largest mobile sources would naturally be found in areas with the largest populations, and the largest stationary sources would include the areas with the most industry. Baton Rouge, New Orleans, and the industrial areas of Lake Charles head the list for Louisiana. When the NO<sub>2</sub> network design is reviewed, it is obvious that our coverage in these three areas is good. There are nine (9) monitors in the petroleum industry-rich corridor of Baton Rouge, two (2) monitors in population rich New Orleans, and one (1) monitor in Vinton (Lake Charles area).

**2004 NITROGEN DIOXIDE ANNUAL MEANS  
NAMS/SLAMS SITES**

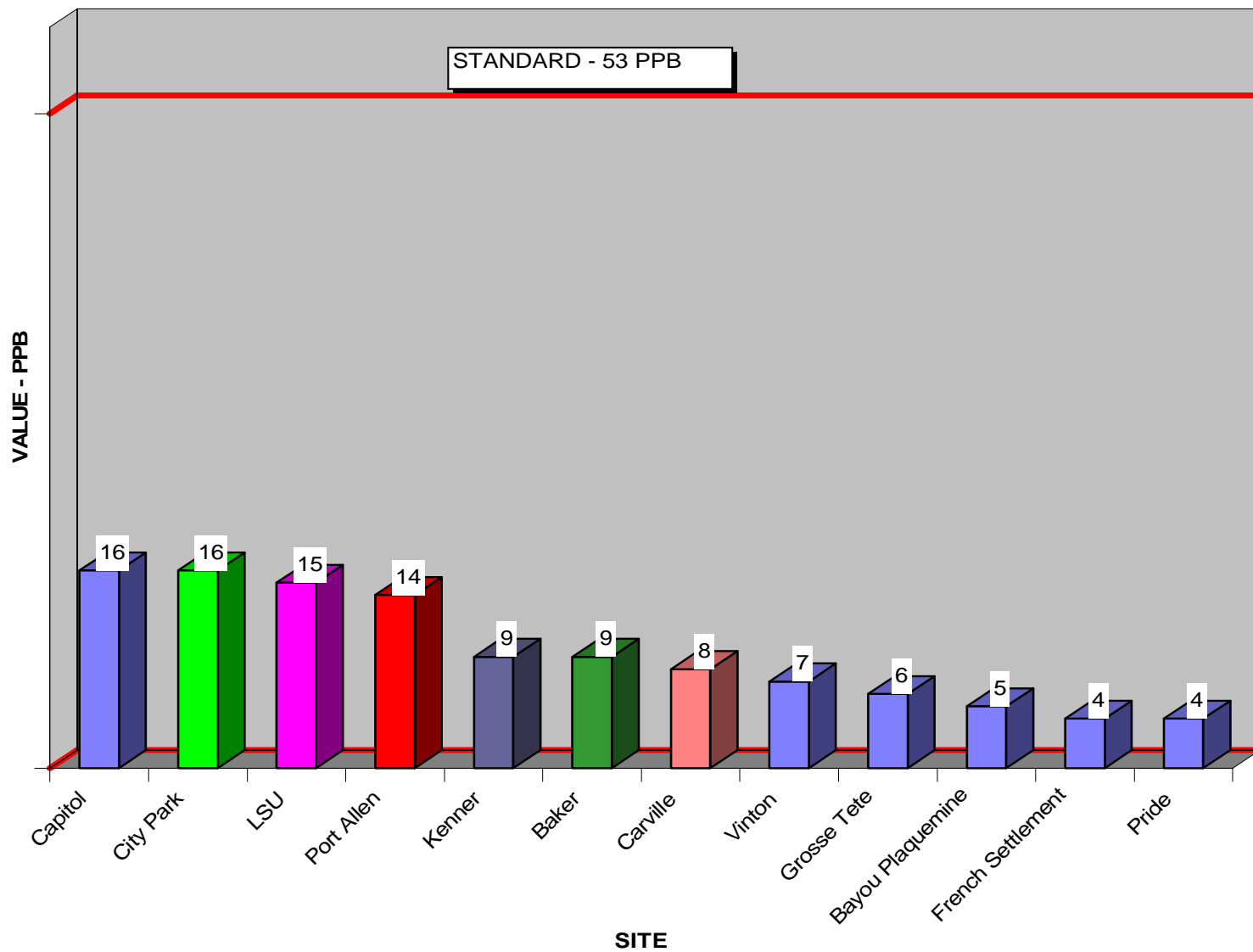


Figure 14: 2004 Nitrogen Dioxide Annual Mean

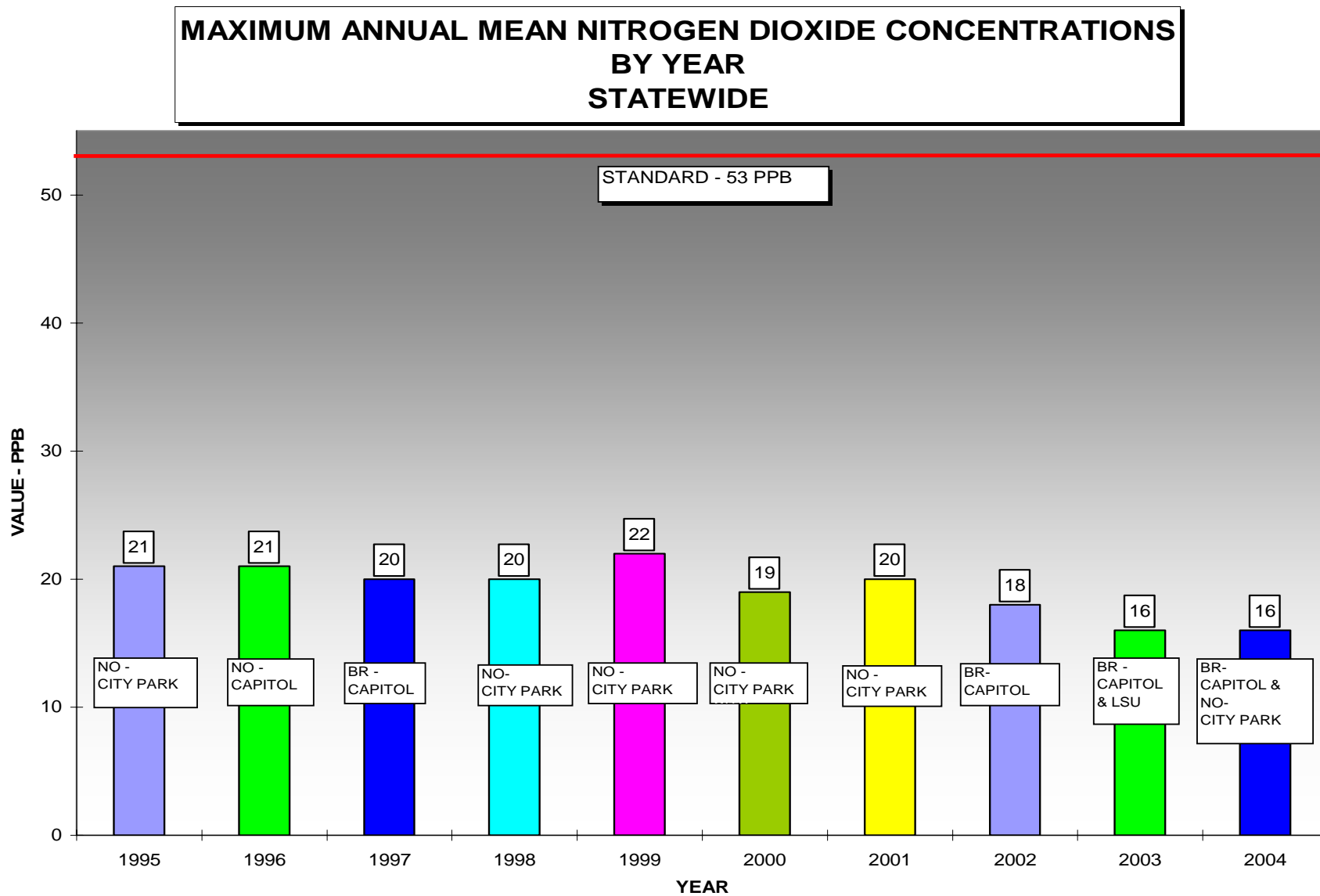


Figure 15: Maximum Annual Mean Nitrogen Dioxide Concentrations By Year Statewide

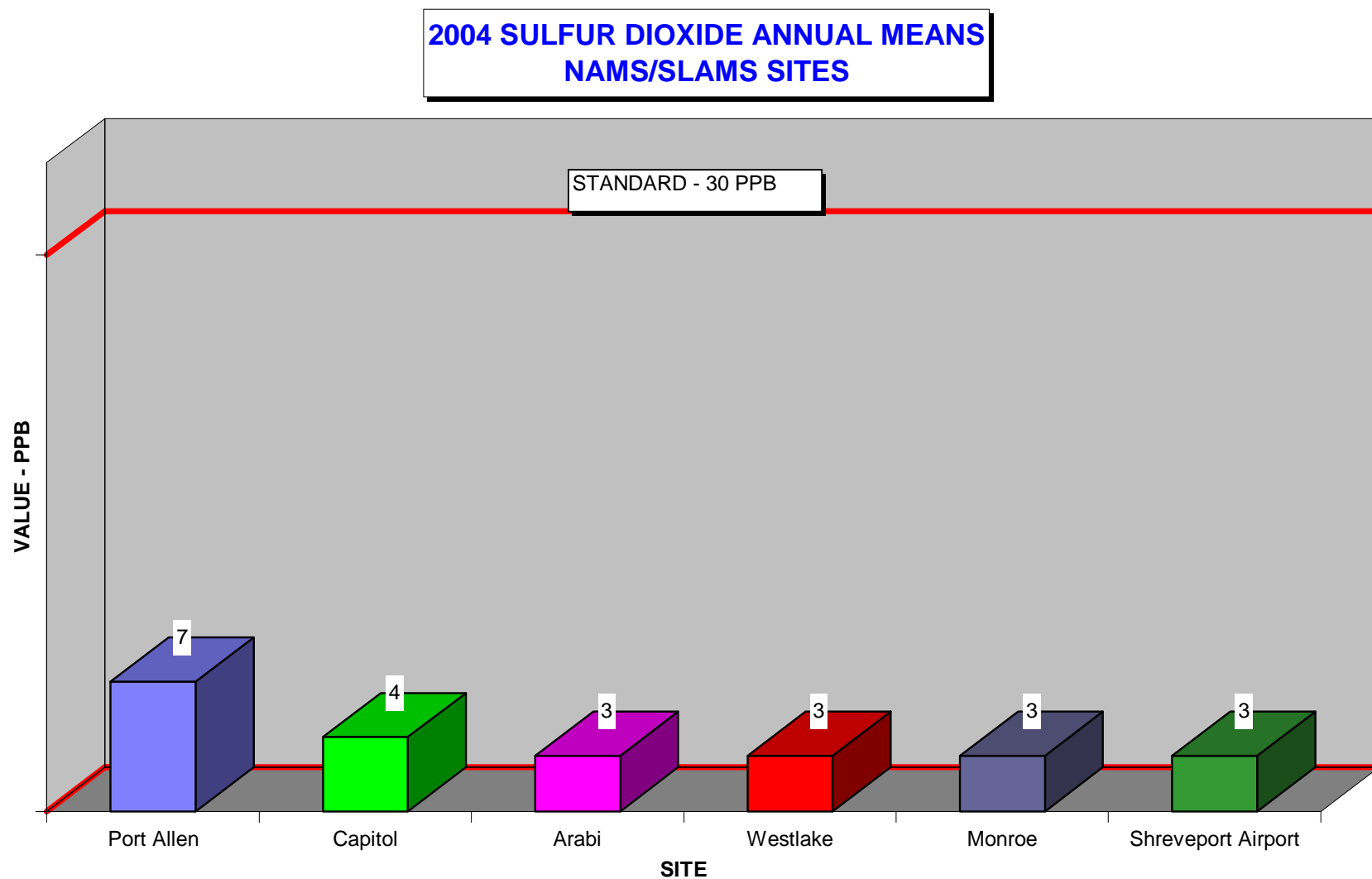
## Sulfur Dioxide

**Table 6: Louisiana Sulfur Dioxide Monitoring Stations**

<b><u>Capital Region</u></b> Capitol Port Allen	<b><u>Southeast Region</u></b> Arabi  <b><u>Southwest Region</u></b> Westlake	<b><u>Northeast Region</u></b> Shreveport Airport Monroe
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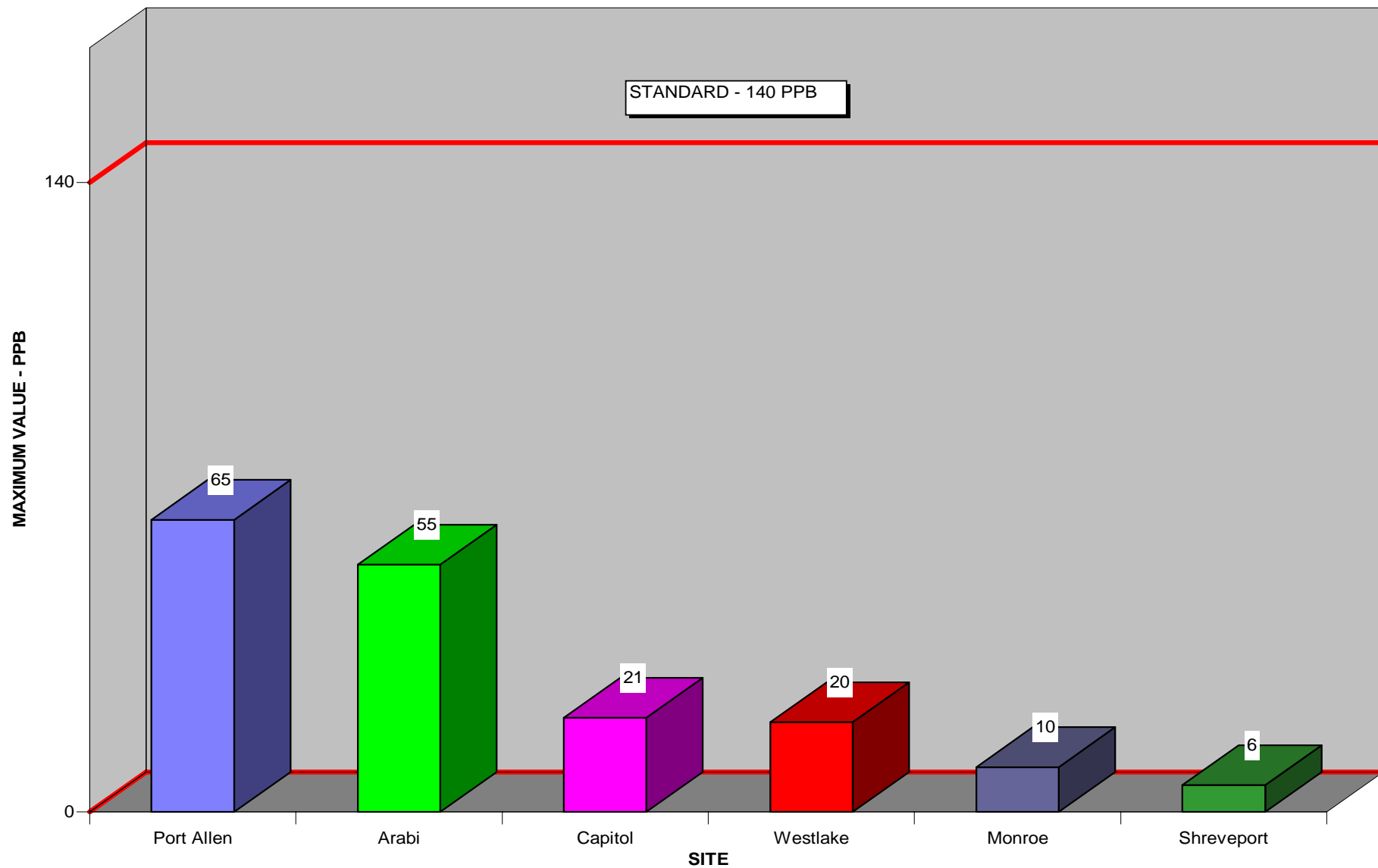
The burning of sulfur or any material containing sulfur causes sulfur dioxide (SO<sub>2</sub>). The main source, by far, is fossil-fuel combustion for electric power generation. SO<sub>2</sub> can form acids when they hydrolyze with water, and the acids can then have detrimental effects on the environment. In addition, SO<sub>2</sub> has been associated with human health problems, damage to plants and animals, smog and haze through the formation of acid mists, and corrosion of metals. Sulfur dioxide sampling in Louisiana has indicated over the past years that the levels of this criteria pollutant in this state are very insignificant when compared with the standard. The highest annual mean during the year 2004 was found at the Port Allen site with a value of 7 ppb (only 23% of the 30 ppb NAAQS).

There are six (6) SO<sub>2</sub> monitoring sites in Louisiana, and these have been stationed primarily in areas of high population or near areas of high electric power generation. Regardless of their proximity to mobile or point sources, the minimal concentrations of SO<sub>2</sub> make these criteria pollutant a virtual non-concern to Louisiana.



**Figure 16: 2004 Sulfur Dioxide Annual Mean**

**2004 MAXIMUM SULFUR DIOXIDE 24 HR VALUES  
NAMS/SLAMS SITES**



**Figure 17: 2004 Maximum Sulfur Dioxide 24 Hr Values**

# **MAXIMUM ANNUAL MEAN SULFUR DIOXIDE CONCENTRATIONS BY YEAR STATEWIDE**

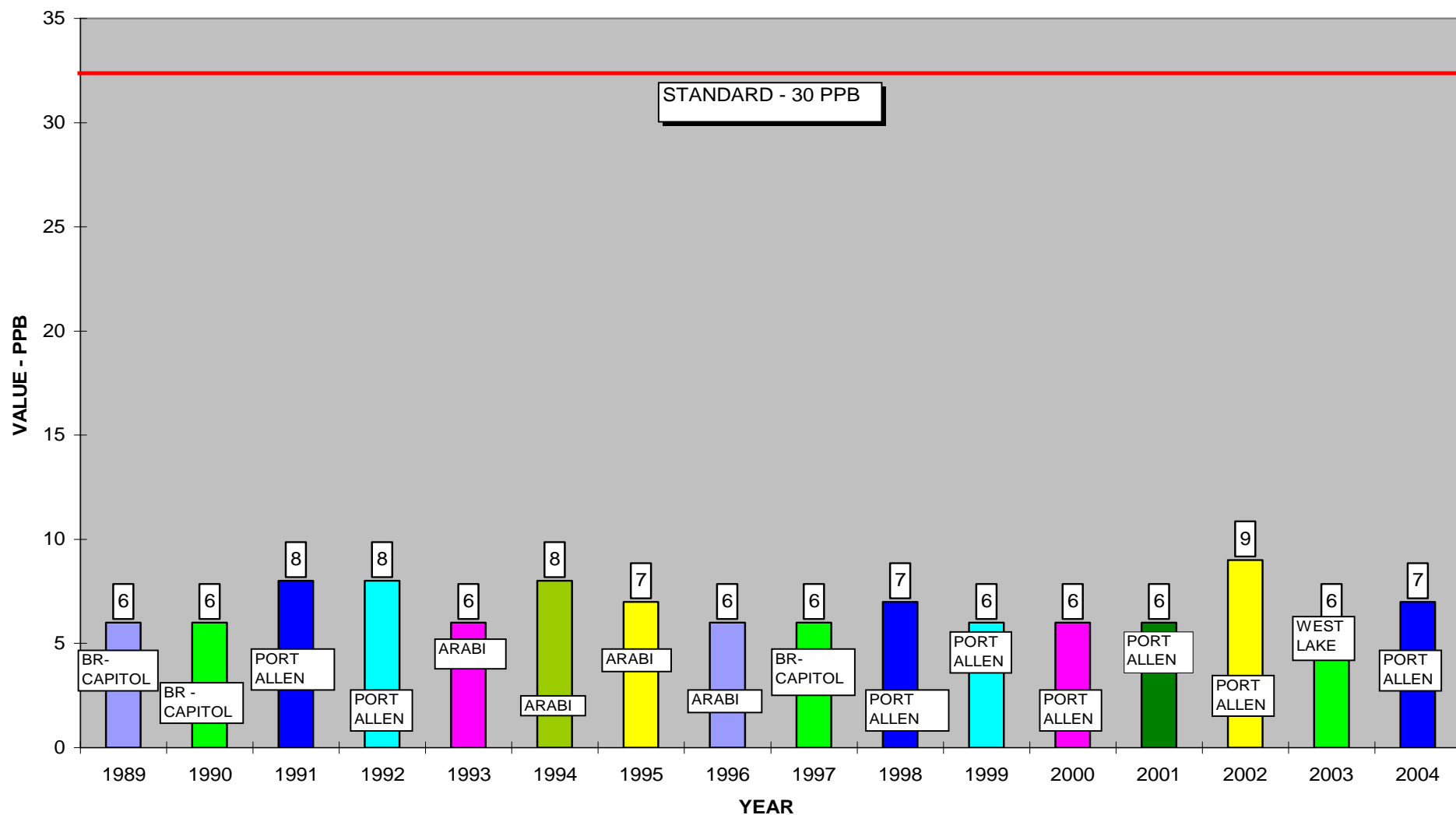
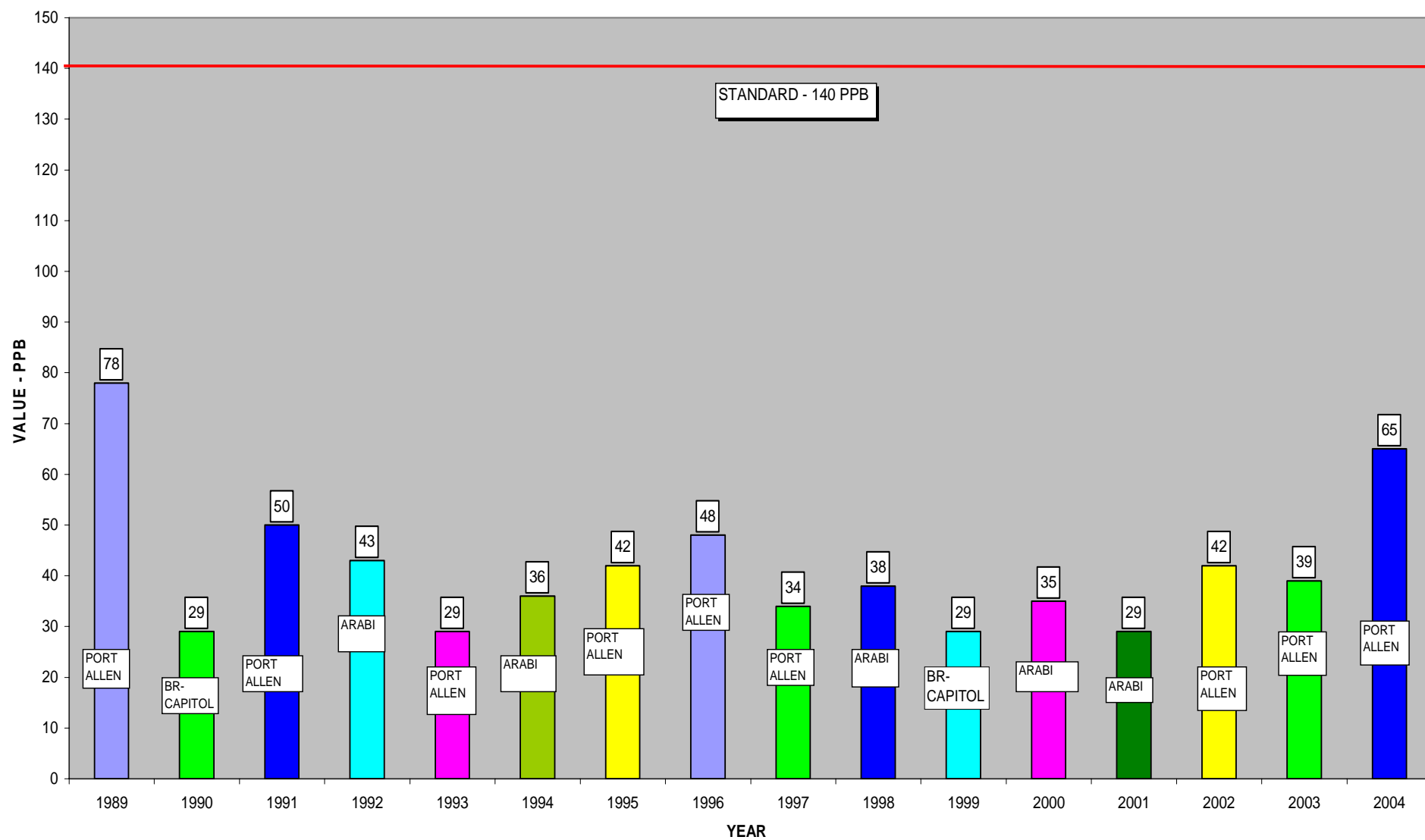


Figure 18: Maximum Annual Mean Sulfur Dioxide Concentrations By Year Statewide

# **MAXIMUM 24 HOUR SULFUR DIOXIDE CONCENTRATIONS BY YEAR STATEWIDE**



**Figure 19: Maximum 24 HR Sulfur dioxide Concentrations By Year Statewide**



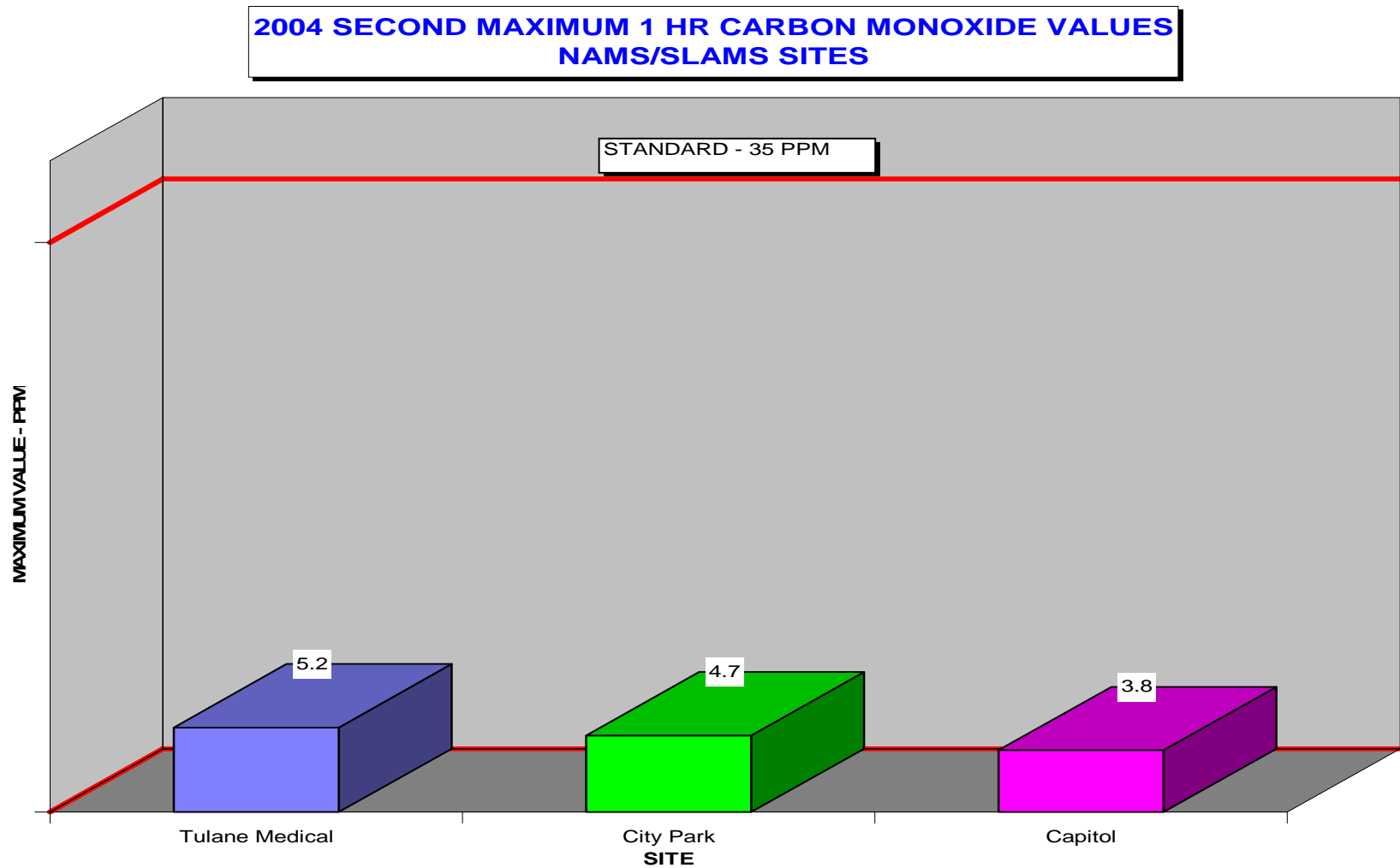
## Carbon Monoxide

<b>Table 7: Louisiana Carbon Monoxide Monitoring Stations</b>	
<b><u>Capital Region</u></b> Capitol	<b><u>Southeast Region</u></b> City Park Tulane Medical Center

Carbon monoxide (CO) is a colorless, odorless, tasteless gas that is caused by the incomplete combustion of any carbonaceous fuel. Since power plants operate to nearly complete combustion, the main source of this pollutant is the transportation sector.

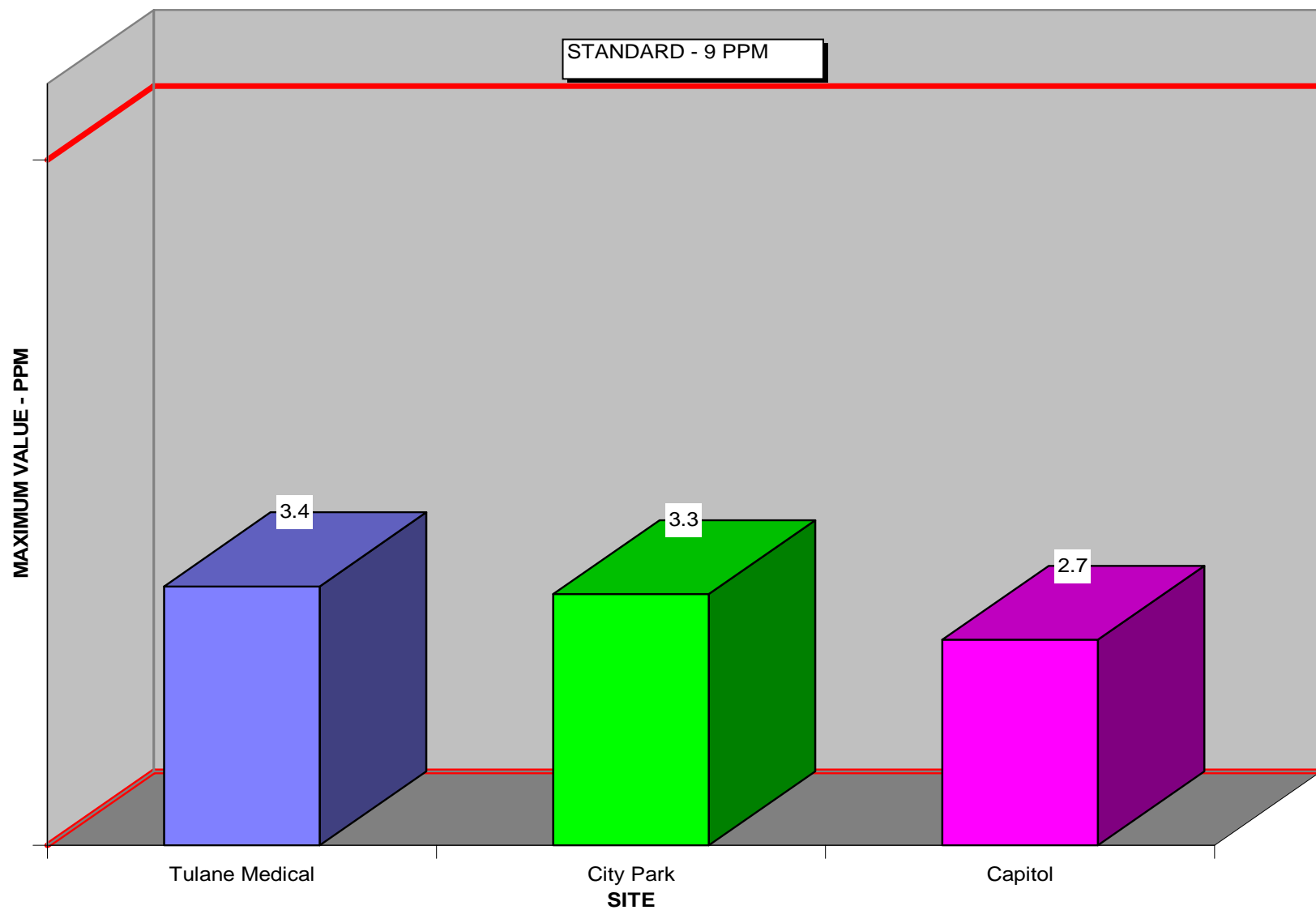
The effects on humans range from slight headaches to nausea to death depending on concentration and time of exposure.

Louisiana's CO levels have always been extremely below the NAAQS. The maximum 2004 1-hour CO concentration was still only 15% of the standard, and the maximum 8-hour CO concentration was only 38% of the standard. The Air Analysis section feels that the carbon monoxide monitor placement is adequate considering the low levels of the pollutant found in the state. Using the above information on the sources of CO, it seems obvious that monitors should be placed in heavy traffic areas with high population. New Orleans is the most populated city in Louisiana, and LDEQ has one monitor placed in close proximity to a busy interstate, with another monitor in the downtown, high traffic area. The Baton Rouge monitor (the state's 2<sup>nd</sup> most populated city) is located in the heart of the city, less than half a mile from busy Interstate I-10. We feel that no changes need to be made to our CO network at this time.



**Figure 20: 2004 Second Maximum Carbon Monoxide Values**

**2004 SECOND MAXIMUM 8 HR CARBON MONOXIDE VALUES  
NAMS/SLAMS SITES**



**Figure 21: 2004 Second Maximum 8 HR Carbon Monoxide Values**

## SECOND MAXIMUM 1 HOUR CARBON MONOXIDE CONCENTRATIONS BY YEAR STATEWIDE

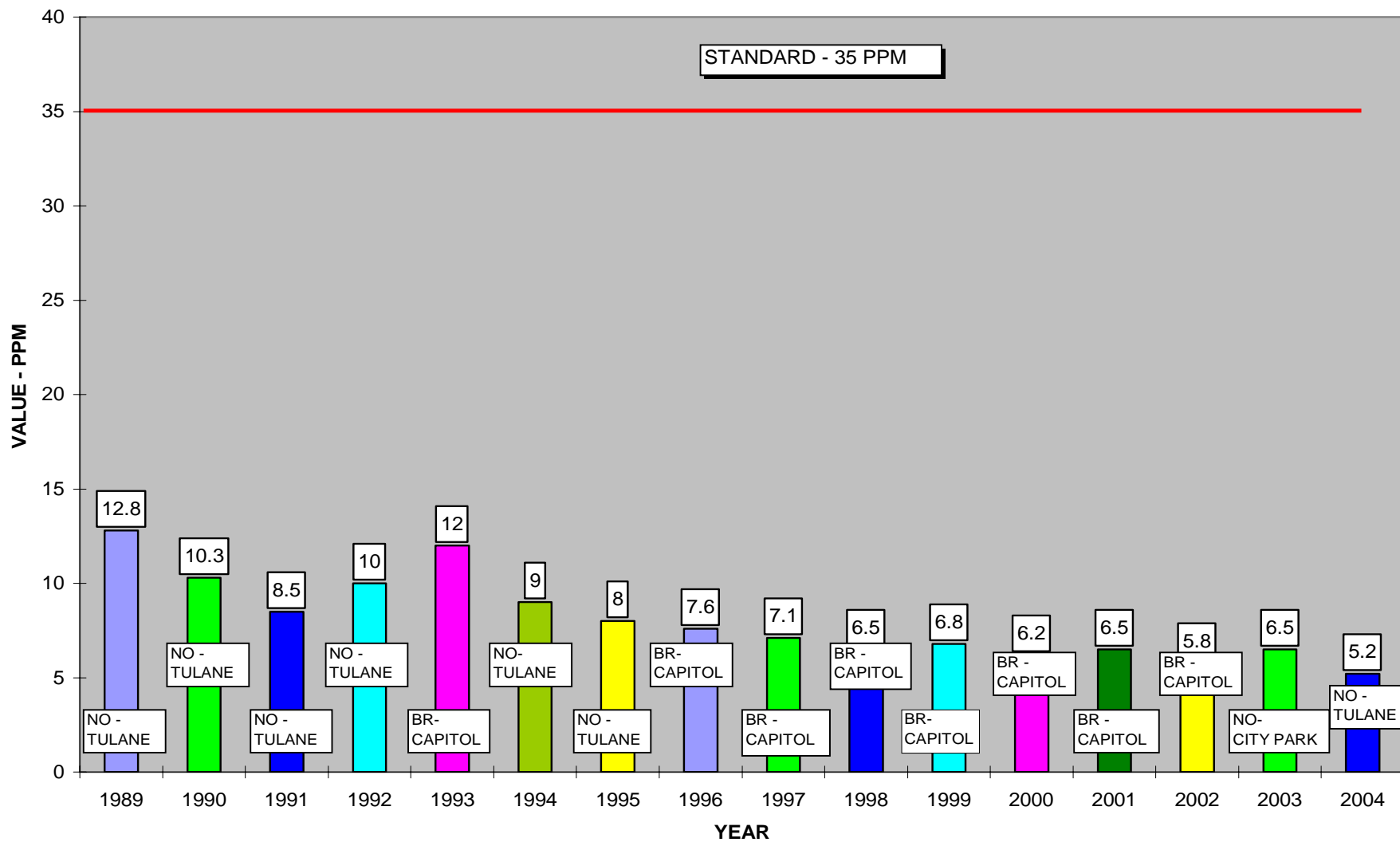


Figure 22: Second Maximum 1 HR Carbon Monoxide Concentrations by Year Statewide

## SECOND MAXIMUM 8 HOUR CARBON MONOXIDE CONCENTRATIONS BY YEAR STATEWIDE

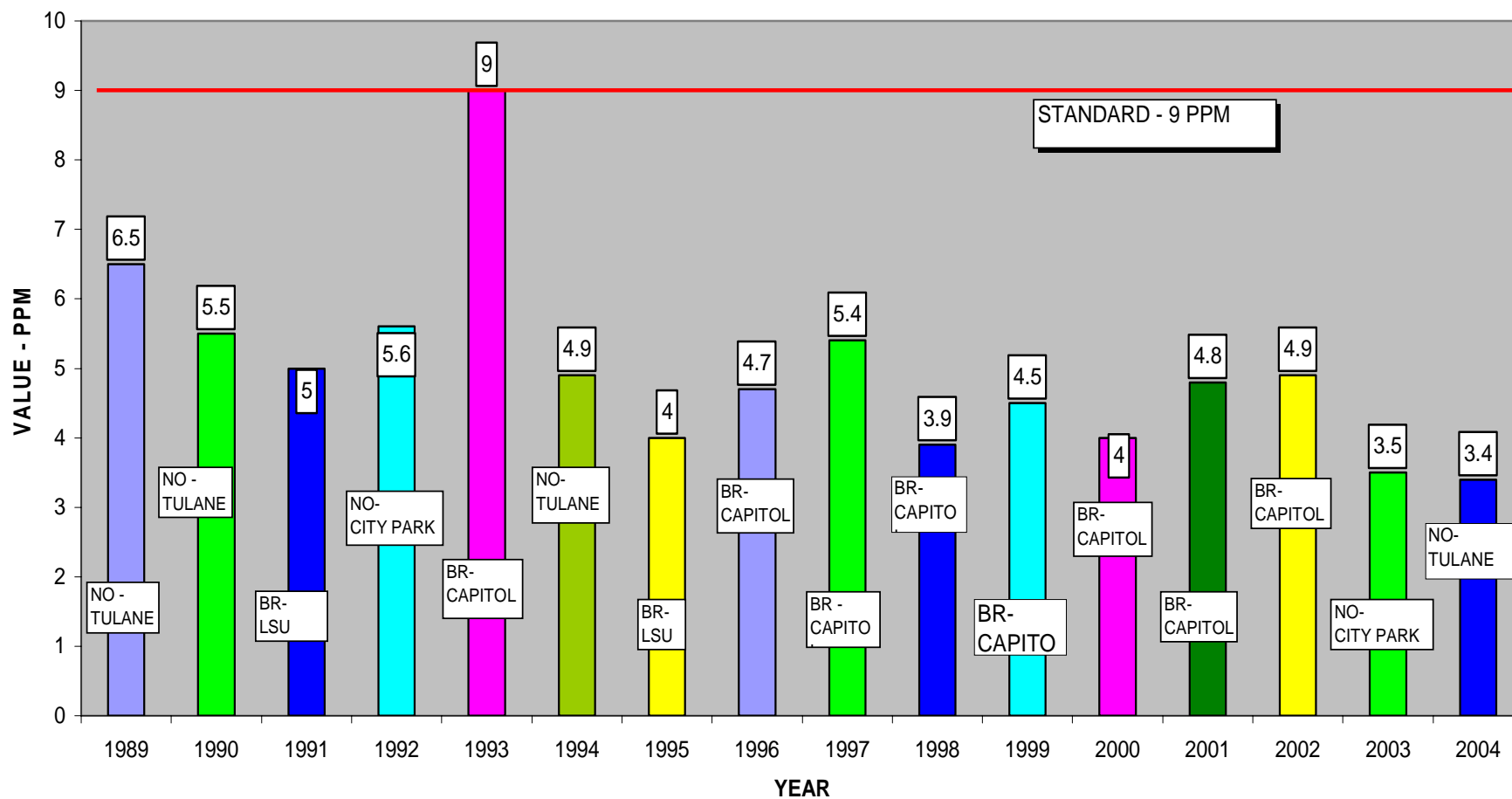


Figure 23: Second Maximum 8 HR Carbon Monoxide Concentrations By Year Statewide

## Particulate Matter (PM 10 and PM 2.5)

Table 8: Louisiana PM 10 Monitoring Stations		
<b><u>Capital Region</u></b> Port Allen	<b><u>Southeast Region</u></b> City Park Water Plant Luling	<b><u>Northwest Region</u></b> Shreveport Claiborne

Particulate matter (or particulates) are very-small-diameter solids or liquids that remain suspended in exhaust gases and can be discharged into the atmosphere. Louisiana currently monitors for 2 different types of particulates, PM<sub>10</sub> and PM<sub>2.5</sub>. The former stands for Particulate Matter 10 microns in diameter or smaller, while PM<sub>2.5</sub> (or PM Fine) samples for particulates much smaller, approximately 2.5 microns or smaller. Particulates are caused by many processes including crushing and grinding ores, loading dry materials in bulk, combustion processes, and from gas conversion reactions in the atmosphere between certain pollutant gases that were emitted previously. There are many different sources of these particulates and the sampling of this criteria pollutant must be intense and widespread to assure good coverage and accurate results.

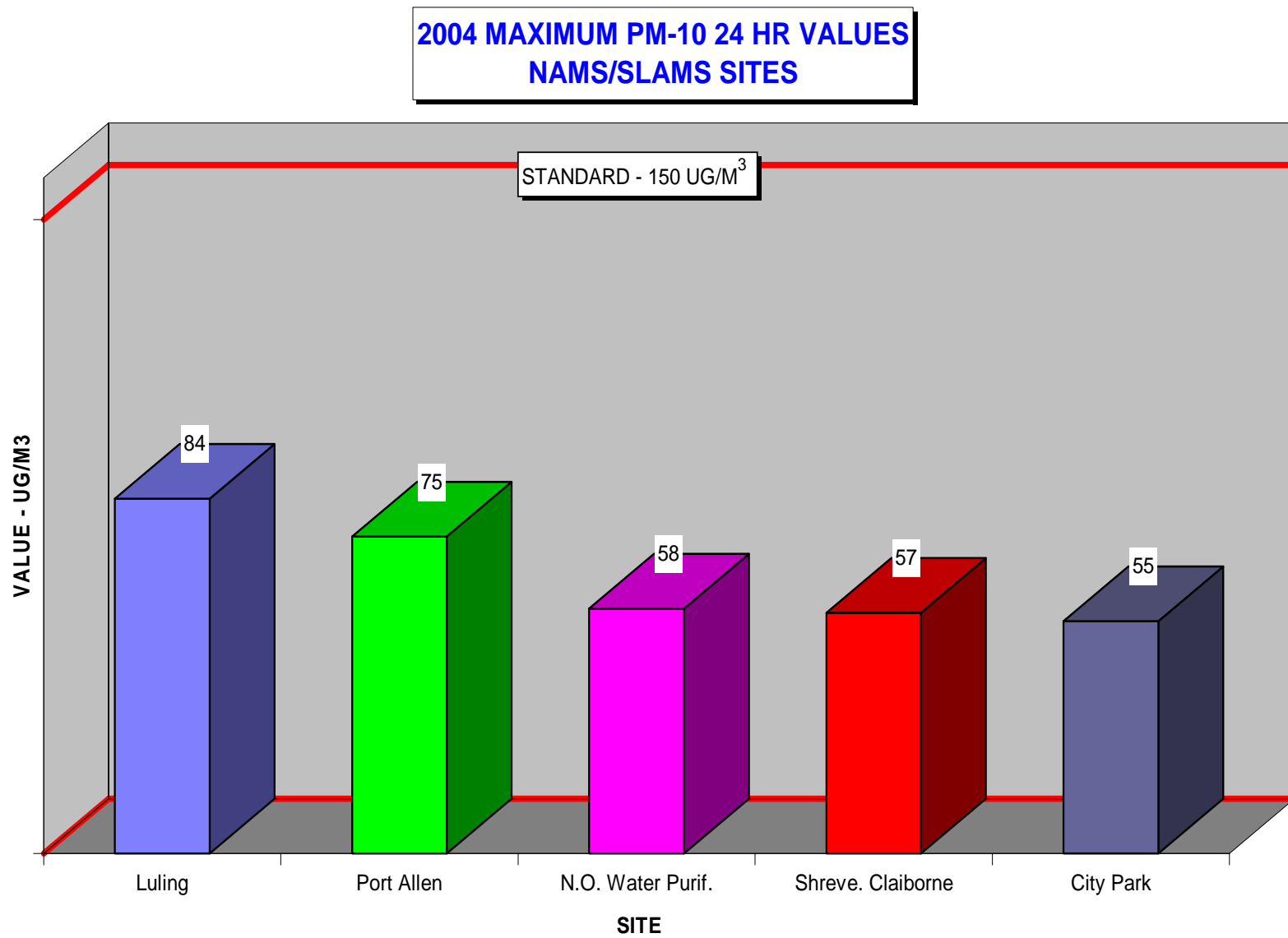
Louisiana, as well as the rest of the country, implemented the PM<sub>2.5</sub> program in January of 1999. A total of 25 sampling sites are established throughout the state. Nineteen sites are furnished with Federal Reference Monitors (FRMs), five sites have collocated monitors and five other sites have continuous samplers. All continuous samplers are R&P TEOM model 1400 AB.

The highest 24hr PM 10 reading in 2004 was 84 µg/m<sup>3</sup> (Luling site) compared to the standard value of 150 µg/m<sup>3</sup>. The highest annual mean was 31.0 µg/m<sup>3</sup> at Port Allen, compared to the 50 µg/m<sup>3</sup> standard.

The highest 3 year annual mean for PM<sub>2.5</sub> was 13.1 µg/m<sup>3</sup> at the Port Allen site. No 24 hour value was above the 65 µg/m<sup>3</sup> standard, the high reading in the state was recorded at the Geismar site at 46.4 µg/m<sup>3</sup>. No samplers in the state showed an annual mean above 15µg/m<sup>3</sup> in 2004. All FRM sites showed a downward trend in concentrations during the past 3 years. This trend was repeated by data obtained from continuous (TEOM) samplers, which have been in operation for only the past 5 years. Statewide, TEOM samplers decreased 7.0% from 2003 compared to FRM samplers which also decreased 5.5% for the same period.

### **Speciation**

For 2004 speciation monitors URG 400 and URG 450 began sampling at the Capitol site in Baton Rouge and at Shreveport airport site, respectively. Results obtained for 2004 annual mean showed that the majority of the mass collected is composed of sulfur compounds (34% of the total weight at capitol and 36% of the total weight at Shreveport). Carbon followed at 41% of the total weight at the Capitol site and 36% of the total weight at the Shreveport airport site. Total mass collected from speciation monitors was 13.7 µg/m<sup>3</sup>, which closely compares to FRM monitor results of 12.6µg/m<sup>3</sup> at capitol site in 2004. For the Shreveport site, total mass was 11.3 µg/m<sup>3</sup> in 2004 compared to 10.3µg/m<sup>3</sup> for TEOM.



**Figure 24: 2004 Maximum PM<sub>10</sub> 24-HR Value**



## 2004 ANNUAL MEAN PM-10 VALUES NAMS/SLAMS SITES

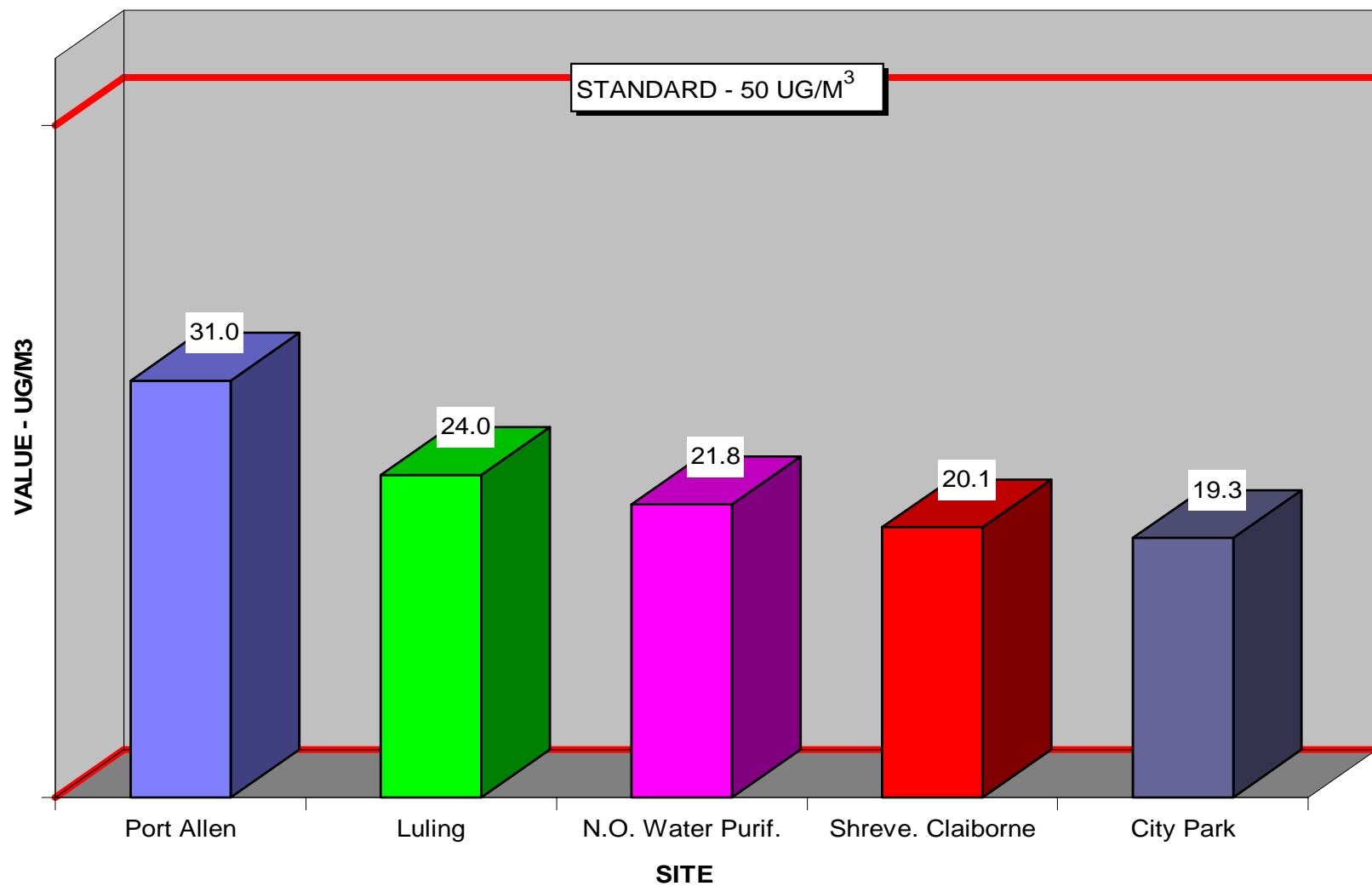
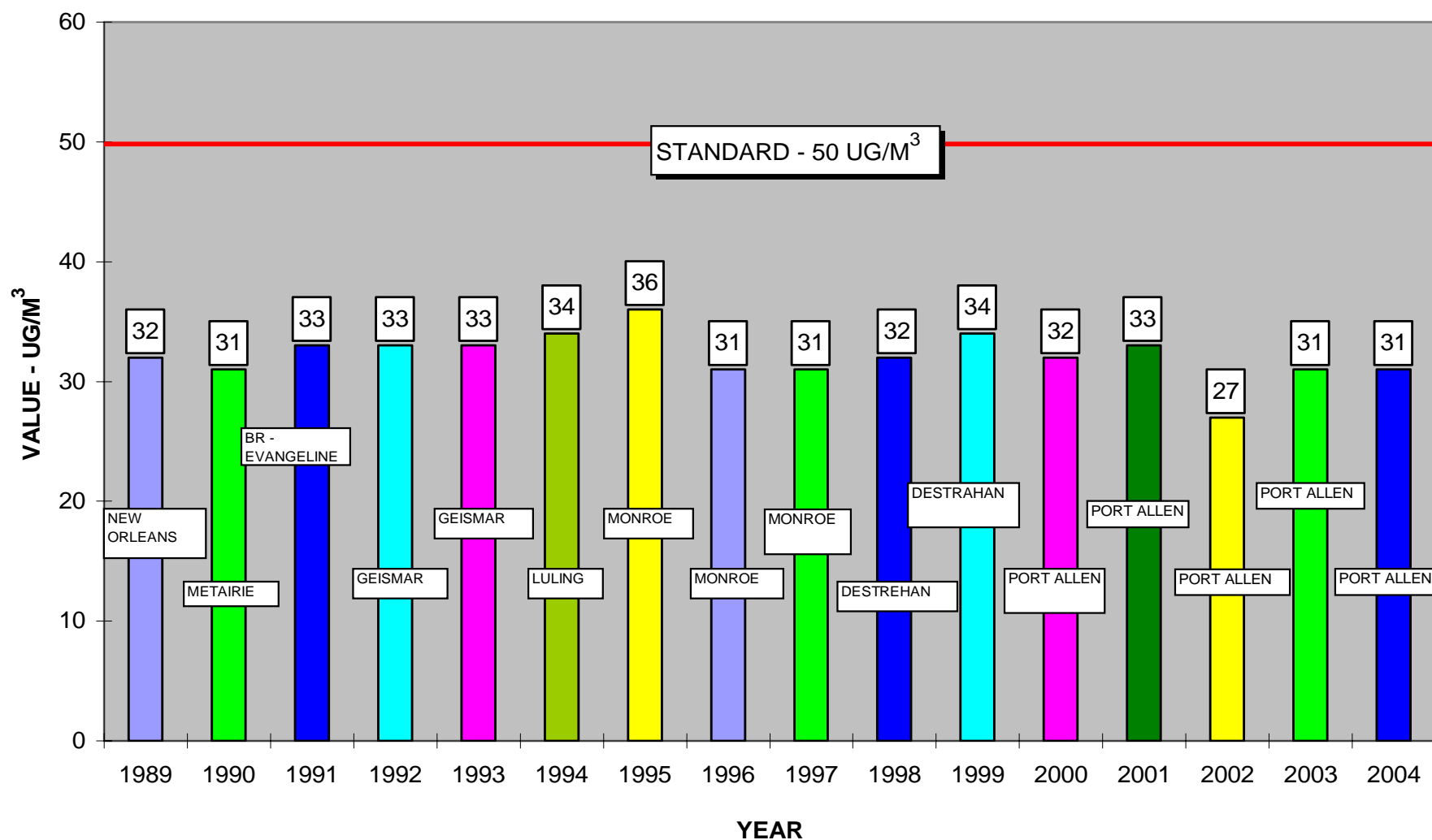


Figure 25: 2004 Annual PM<sub>10</sub> Values

# **MAXIMUM ANNUAL MEAN PM - 10 CONCENTRATIONS BY YEAR STATEWIDE**



**Figure 26: Maximum Annual Mean PM<sub>10</sub> Concentrations by Year**

### Maximum 24 hour PM 10 Concentrations by Year Statewide (2002-2004)

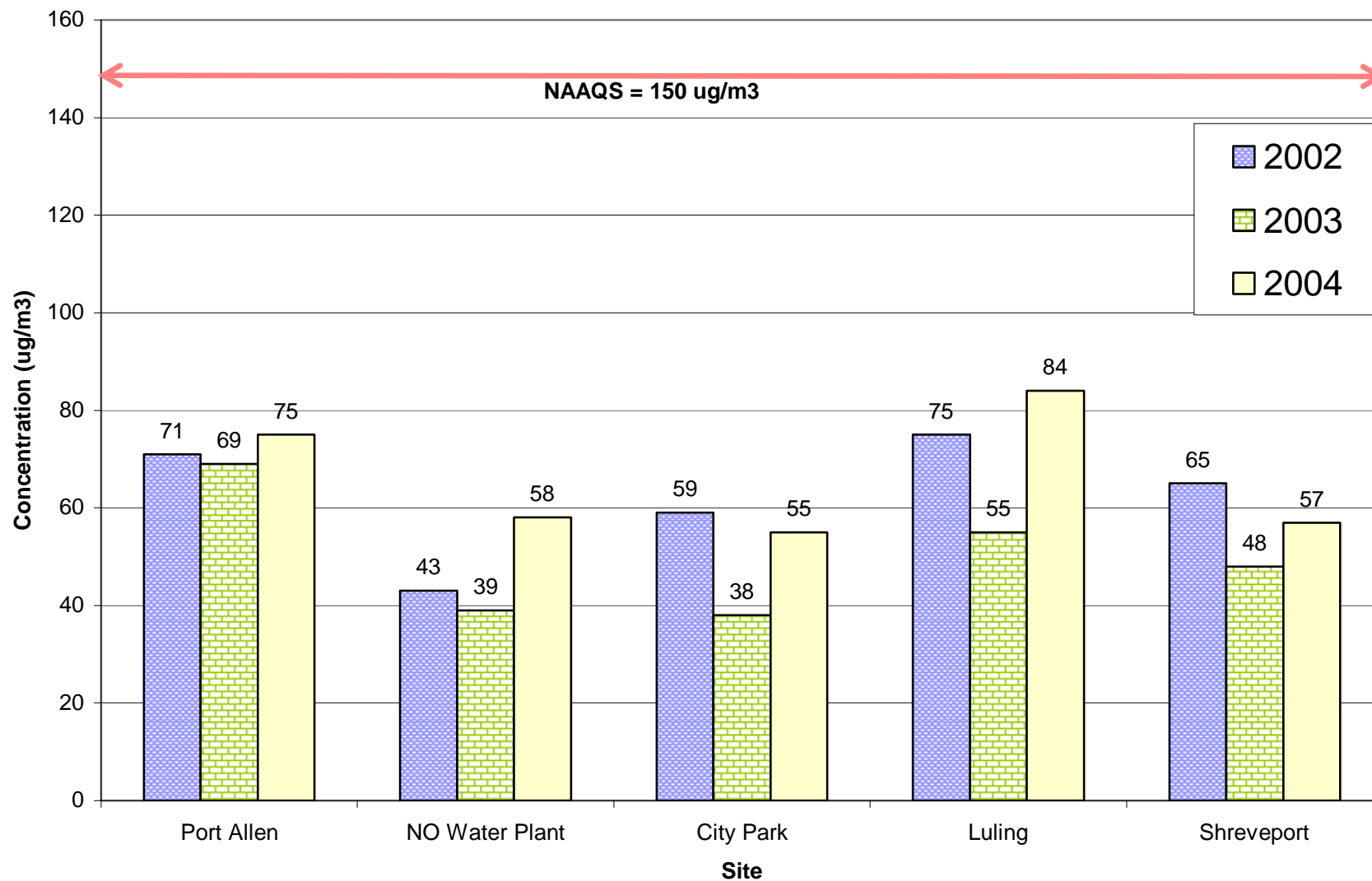


Figure 27: Maximum 24 HR PM<sub>10</sub> Concentrations By Year Statewide (2002-2004)

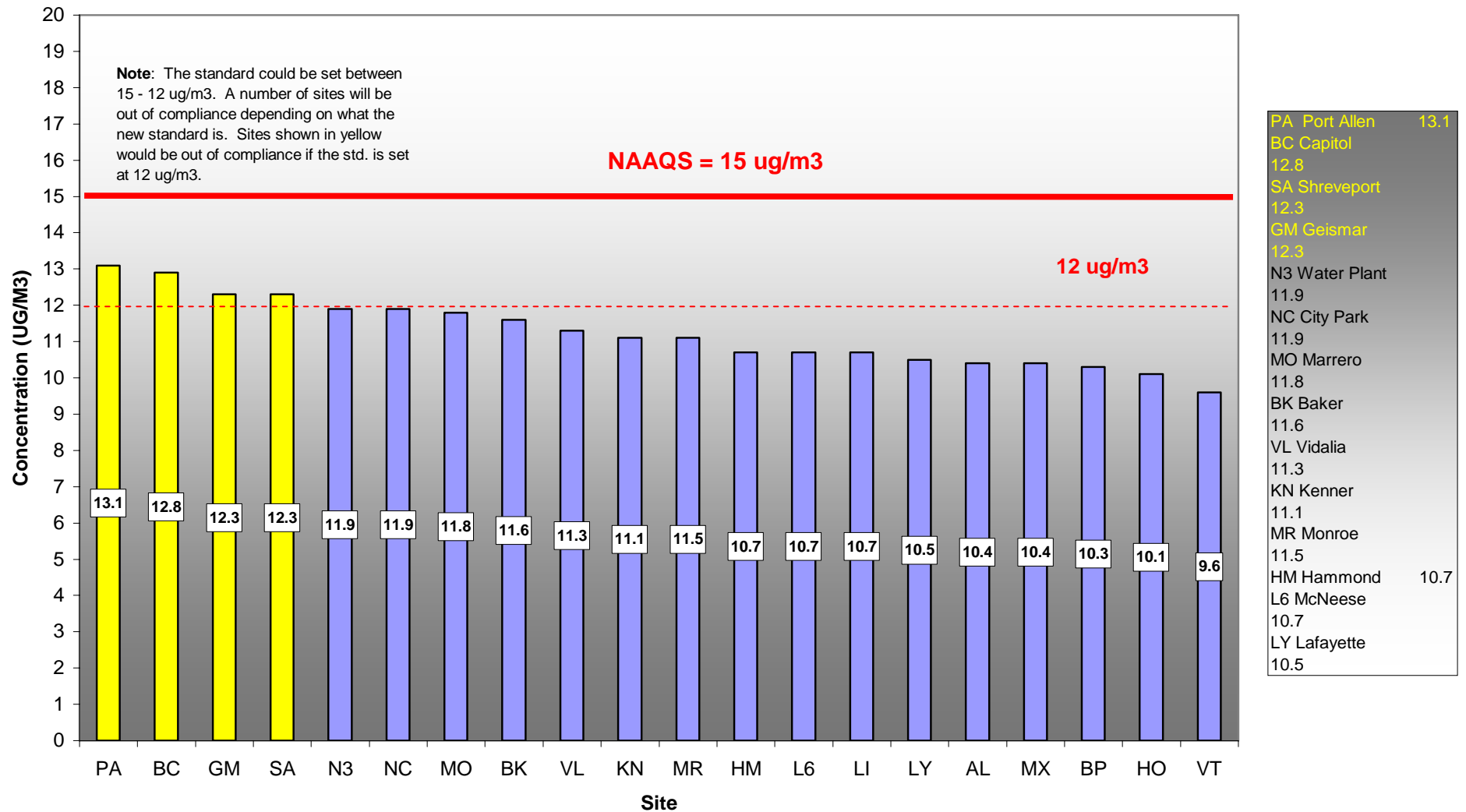
Table 9: PM2.5 Sampling Frequency Summary

## Sampling Frequency Summary

as of January 2004

		AQS NO.	SAMPLING FREQ.	MONITOR	STARTUP
	<b>CORE SITES (7)</b>				
1	Baton Rouge Capitol	9220330009	Everyday	FRM sequential	1/1/1999
	Baton Rouge Capitol (Collocated)	9220330009	Every sixth day	FRM sequential	1/1/1999
x	<del>Baton Rouge Evangeline Street discontinued 12/03</del>	<del>220330002</del>	<del>Every third day</del>	<del>FRM sequential</del>	<del>4/2/1999</del>
2	Port Allen	9221210001	Everyday	FRM sequential	1/1/1999
	New Orleans City Park	9220710012	Everyday	FRM sequential	1/1/1999
3	New Orleans City Park (Collocated)	9220710012	Every sixth day	FRM sequential	1/1/1999
	New Orleans City Park	9220710012	Continuous	Continuous	6/1/2003
4	New Orleans Water Purification	9220710010	Every third day	FRM sequential	1/1/1999
5	Kenner	9220511001	Everyday	FRM sequential	1/1/1999
	Kenner	9220511001	Continuous	Continuous	7/10/2003
6	Lafayette	9220550005	Every third day	FRM sequential	1/1/1999
	Lafayette (Collocated)	9220550005	Every sixth day	FRM sequential	1/1/1999
7	Shreveport Claiborne Street	9220171002	Every third day	FRM sequential	1/1/1999
	Shreveport Claiborne Street (Collocated)	9220171002	Every sixth day	FRM sequential	1/1/1999
	<b>NON-CORE SITES (10)</b>				
1	Lafayette (State Police Station)	9220550006	Every third day	FRM sequential	1/1/2000
2	Hammond (Background Site)	9221050001	Every third day	FRM sequential	1/1/1999
	Hammond (Collocated)	9221050001	Every sixth day	FRM sequential	1/1/2002
3	Bayou Plaquemine	9220470009	Every third day	FRM sequential	1/1/1999
4	Geismar	9220470005	Every third day	FRM sequential	1/1/1999
5	Meraux	9220870004	Every third day	FRM sequential	1/1/2000
6	Vinton (Transport Site)	9220190009	Every third day	FRM sequential	1/1/1999
7	Lake Charles McNeese	9220190010	Every third day	FRM sequential	1/1/1999
8	Alexandria	9220790001	Every third day	FRM sequential	1/1/1999
9	Monroe	9220730004	Every third day	FRM sequential	1/1/1999
10	Houma	9221090001	Every third day	FRM sequential	1/1/2000
	<b>SUPPLEMENTAL SITES (8)</b>				
1	Baker	9220331001	Every sixth day	FRM sequential	1/1/1999
2	French Settlement	220630002	Continuous	Continuous	1/1/2000
3	Pride	220330013	Continuous	Continuous	1/1/2000
4	Thibodaux	220570004	Continuous	Continuous	1/1/2000
5	Marrero	9220512001	Every sixth day	FRM sequential	1/1/1999
6	Shreveport Airport	220150008	Continuous	Continuous	1/1/2000
7	Westlake	220190008	Continuous	Continuous	1/1/2000
8	Vidalia	9220290003	Every sixth day	FRM sequential	1/1/1999

**LOUISIANA - PM 2.5  
3 YEARS AVERAGE ANNUAL MEAN  
2002-2004**



**Figure 28: Louisiana PM<sub>2.5</sub> 3 Year Average Annual Mean (2002-2004)**

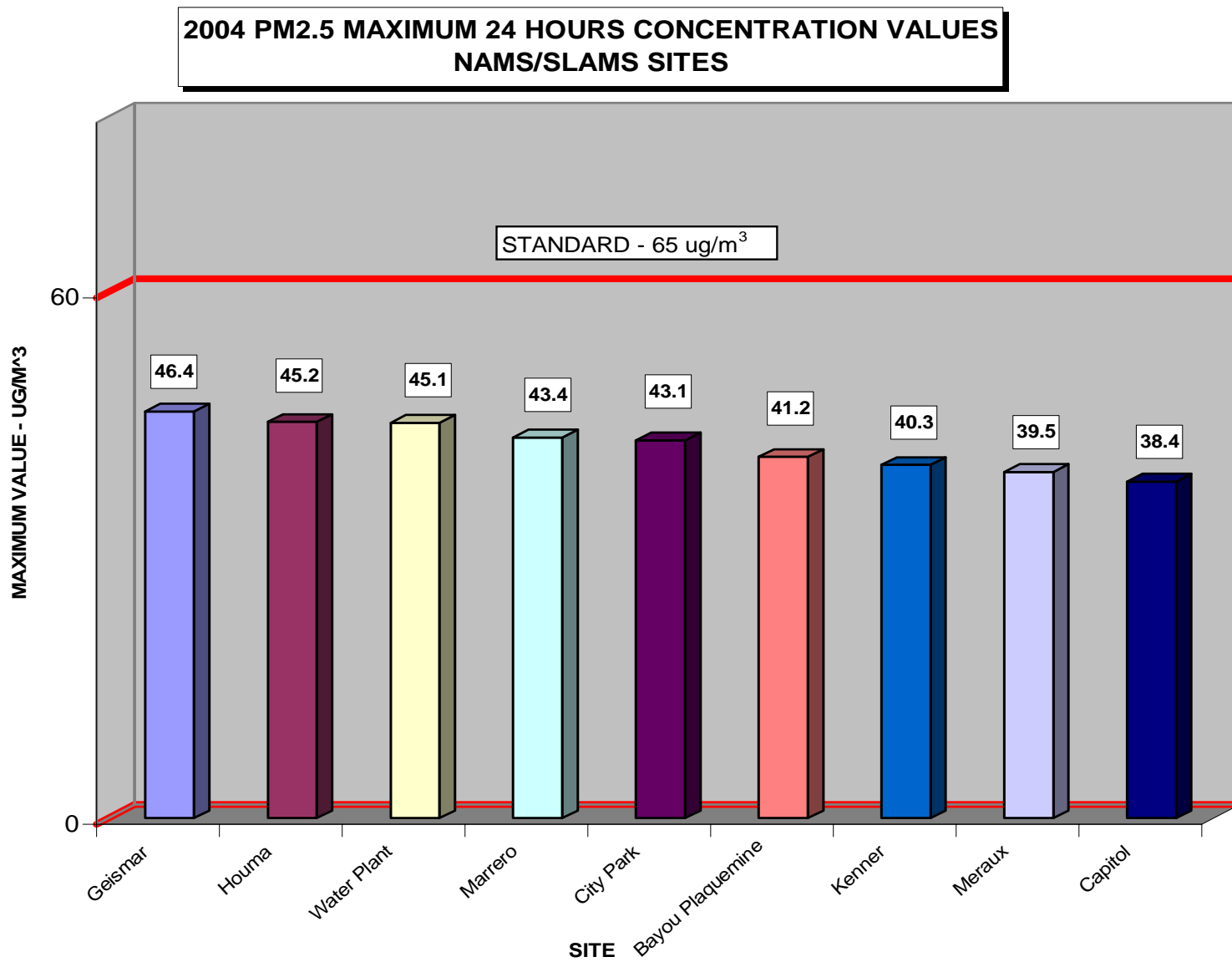
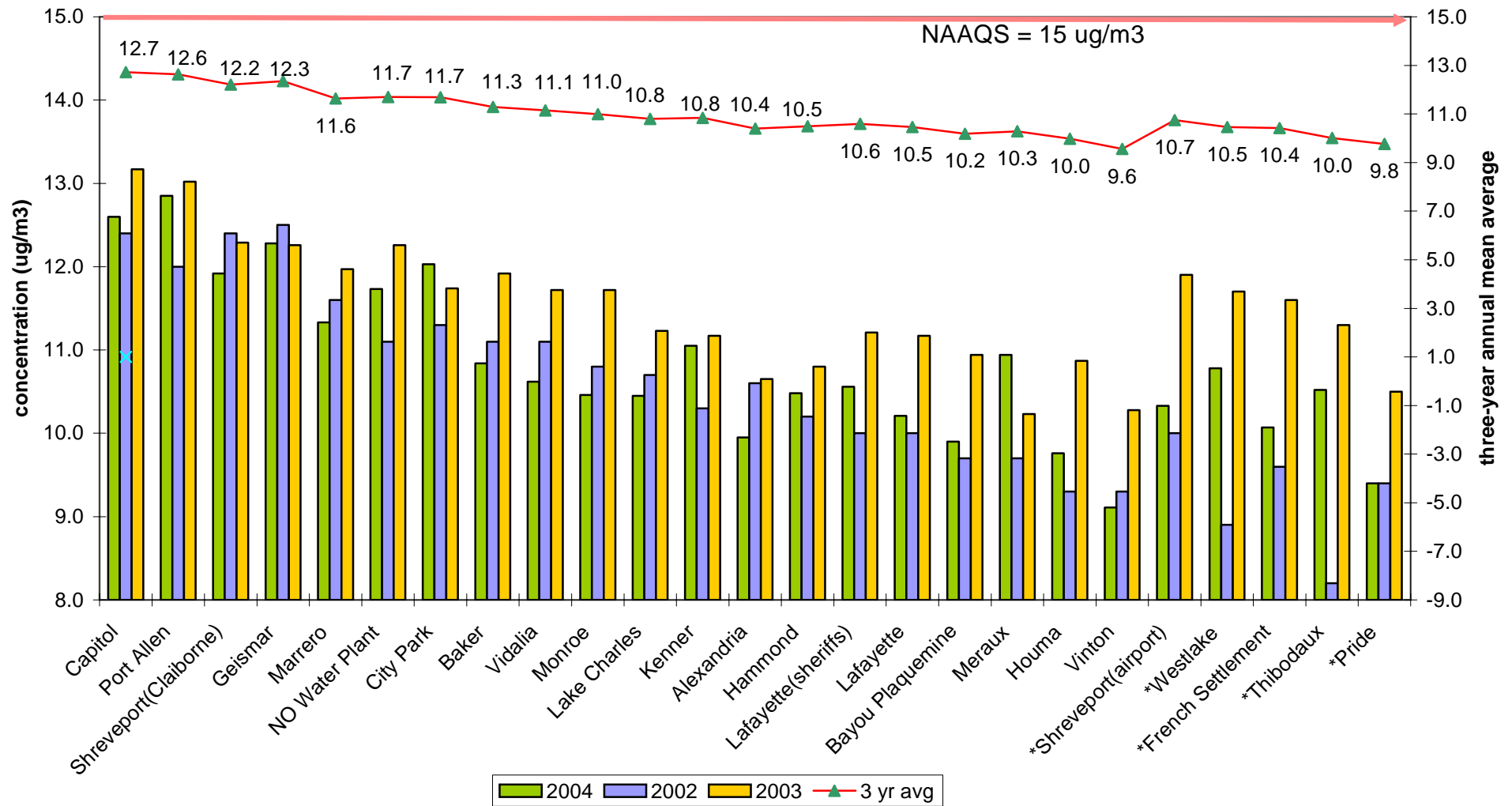


Figure 29: 2004 PM<sub>2.5</sub> 24 HR Concentration Values

# PM<sub>2.5</sub> Annual Means 2002-2004



\* TEOM

Figure 30: PM<sub>2.5</sub> Annual Mean 2002-2004

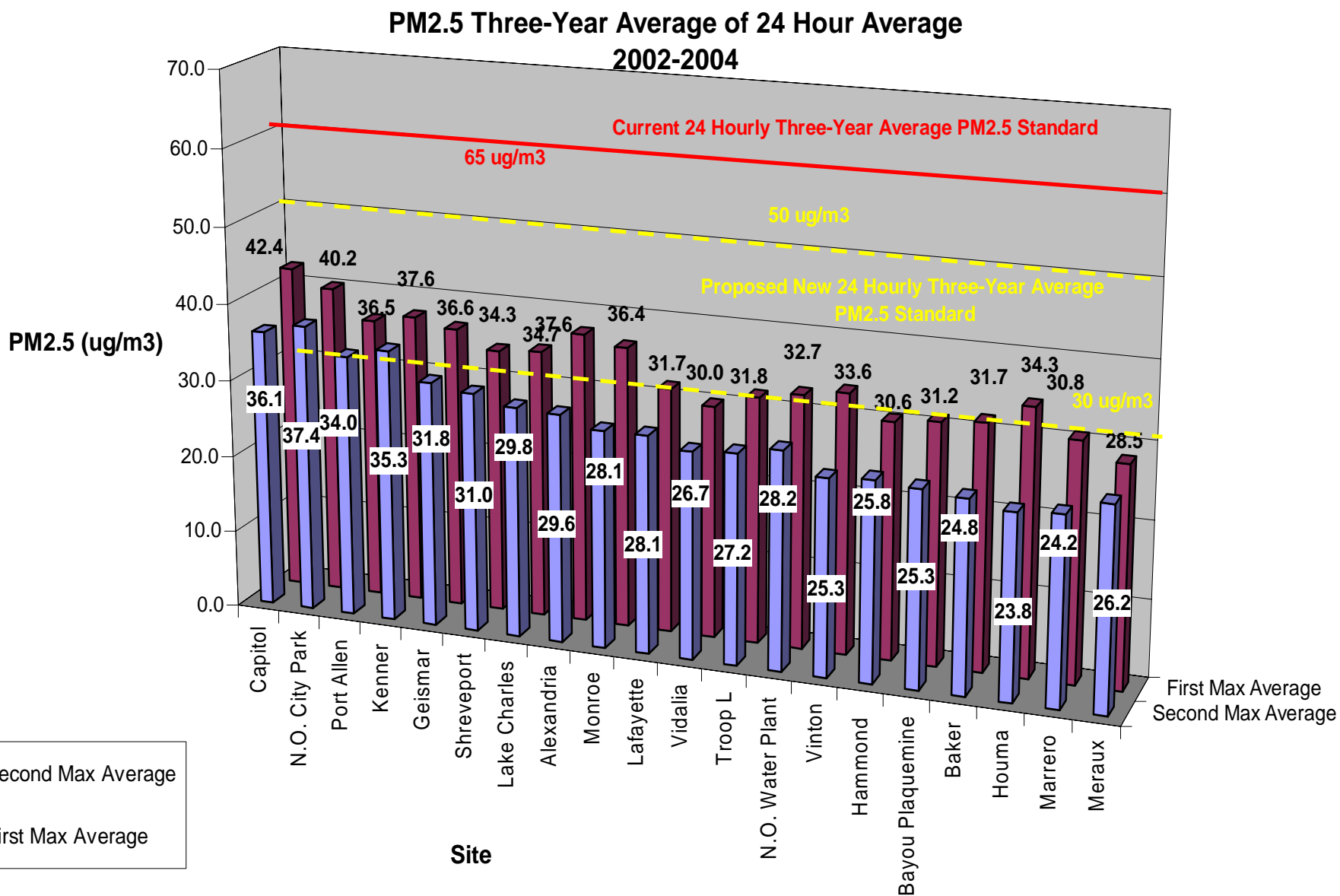
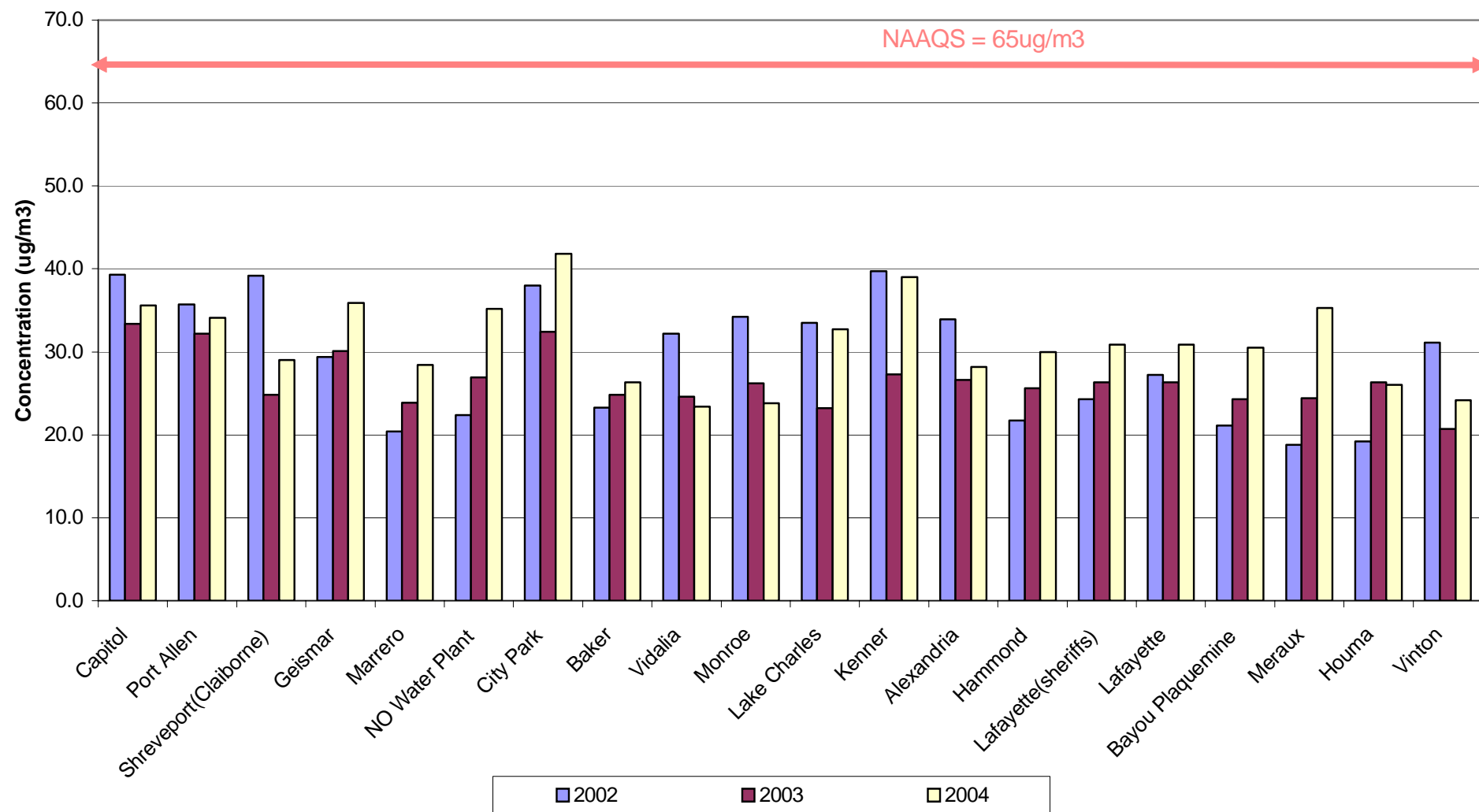


Figure 31: PM<sub>2.5</sub> 3 Year Average of 24-Hour Average 2002-2004

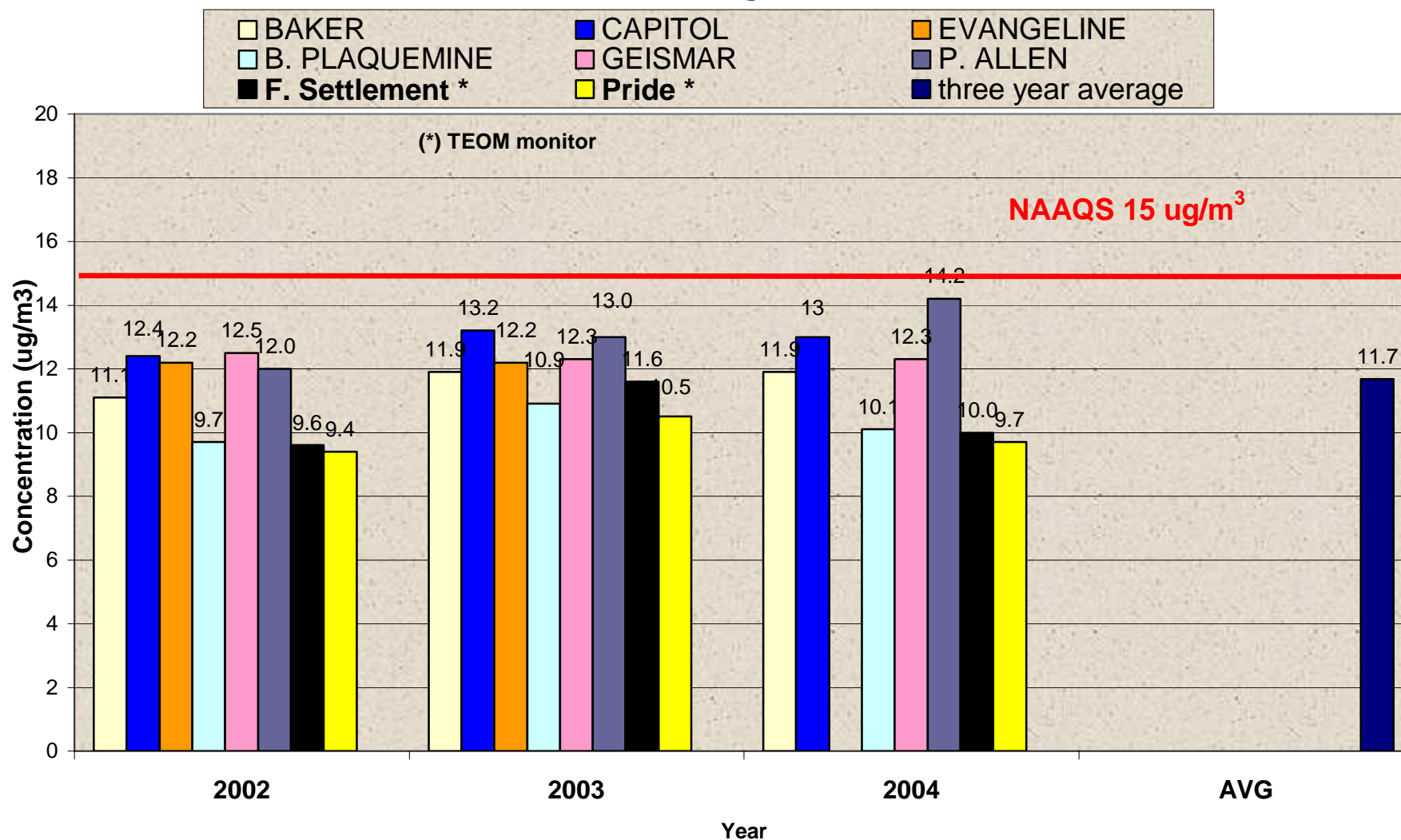


# **PM<sub>2.5</sub> 24-hour 2nd Maximum Concentrations 2002-2004**



**Figure 32: PM<sub>2.5</sub> 2<sup>nd</sup> Maximum Concentrations 2002-2004**

# **PM 2.5 CONCENTRATION - ANNUAL AVERAGE** **Baton Rouge MSA**



**Figure 33:PM<sub>2.5</sub> Annual Average Concentration- Baton Rouge MSA**

## PM 2.5 CONCENTRATION - ANNUAL MEAN AVERAGE New Orleans MSA

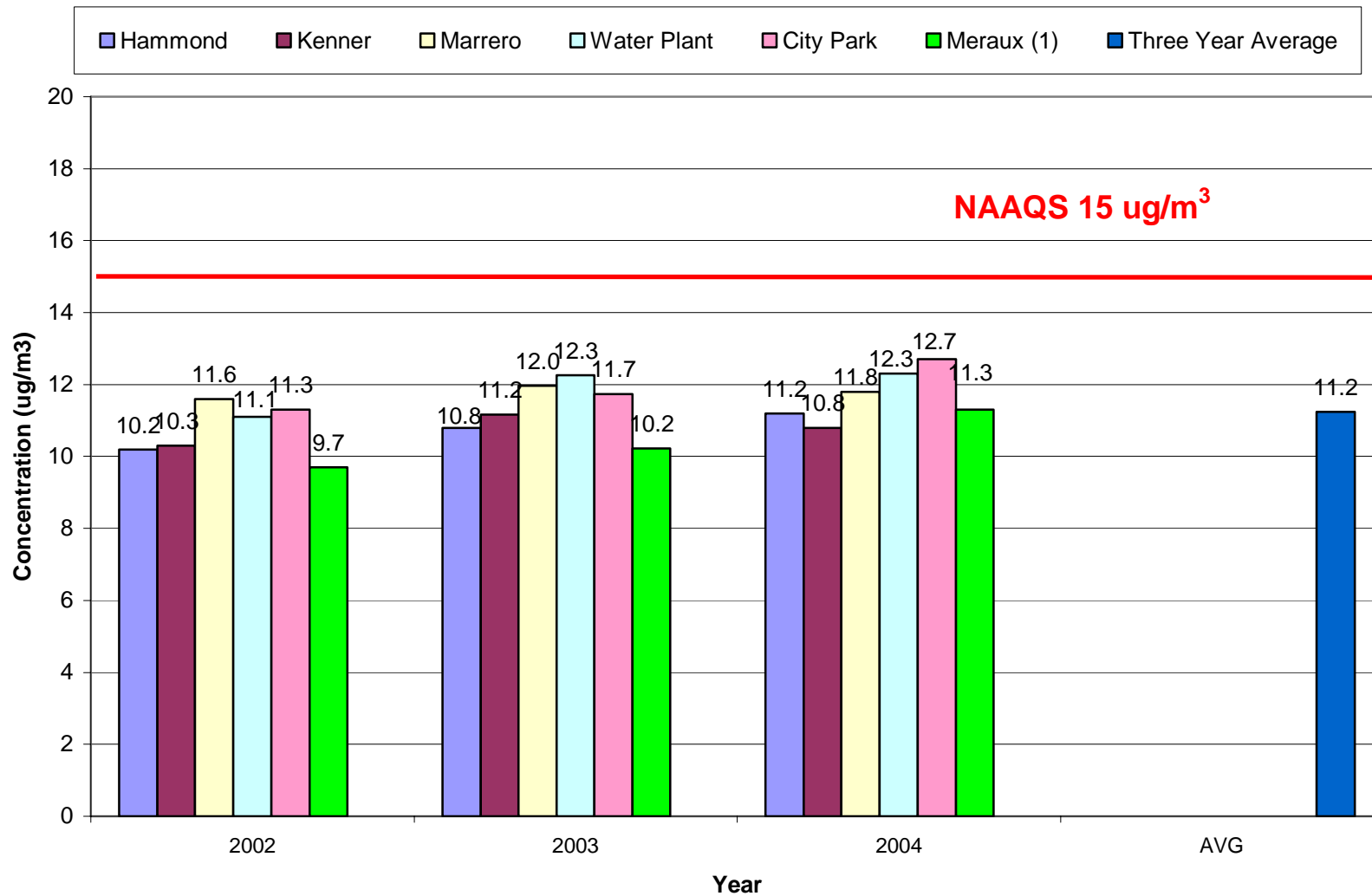


Figure 34: PM<sub>2.5</sub> Annual Mean Average Concentration- New Orleans MSA

## PM 2.5 CONCENTRATION - ANNUAL AVERAGE LAKE CHARLES MSA

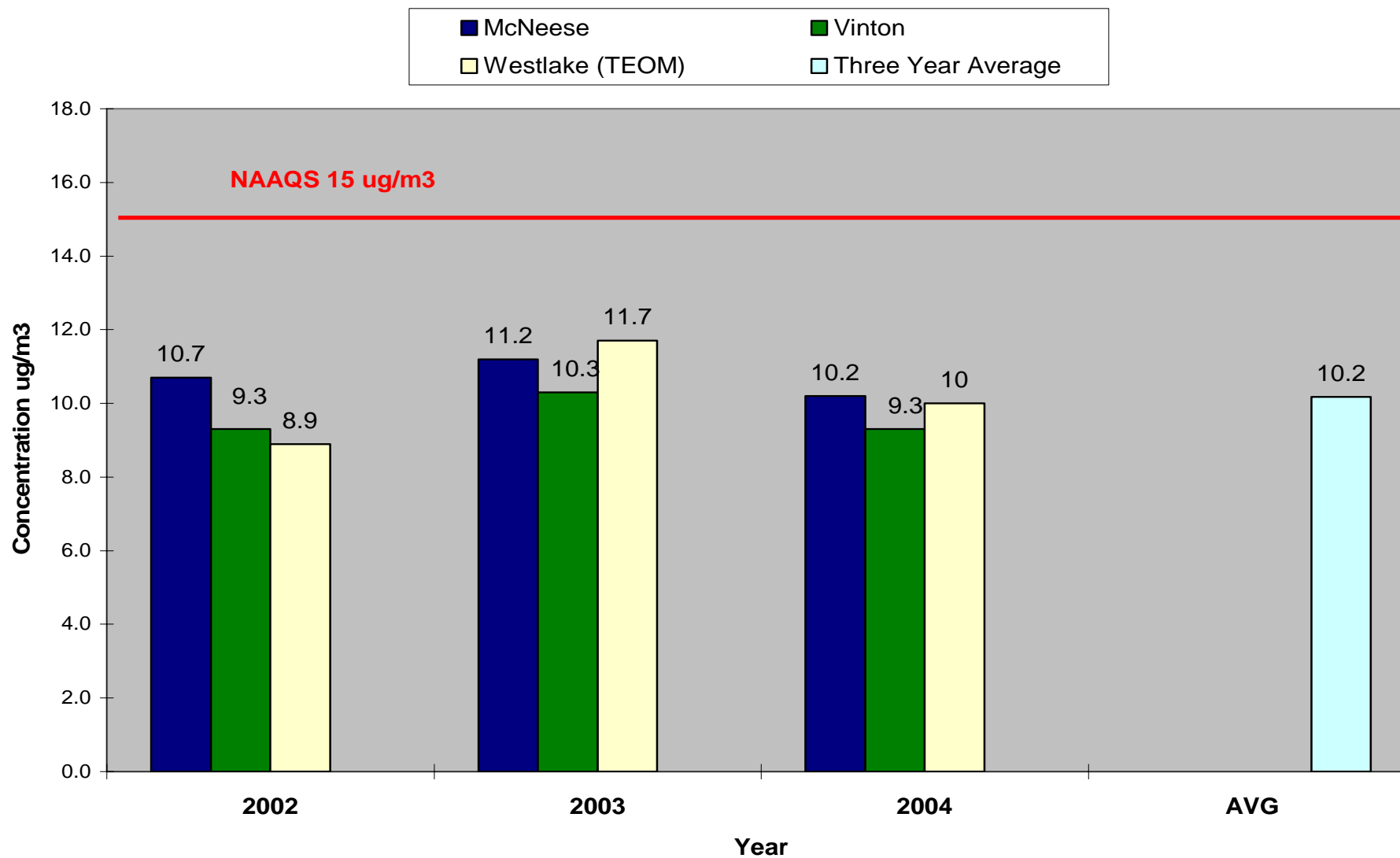


Figure 35: PM<sub>2.5</sub> Annual Mean Average Concentration- Lake Charles MSA

# PM 2.5 CONCENTRATION - ANNUAL AVERAGE SHREVEPORT MSA

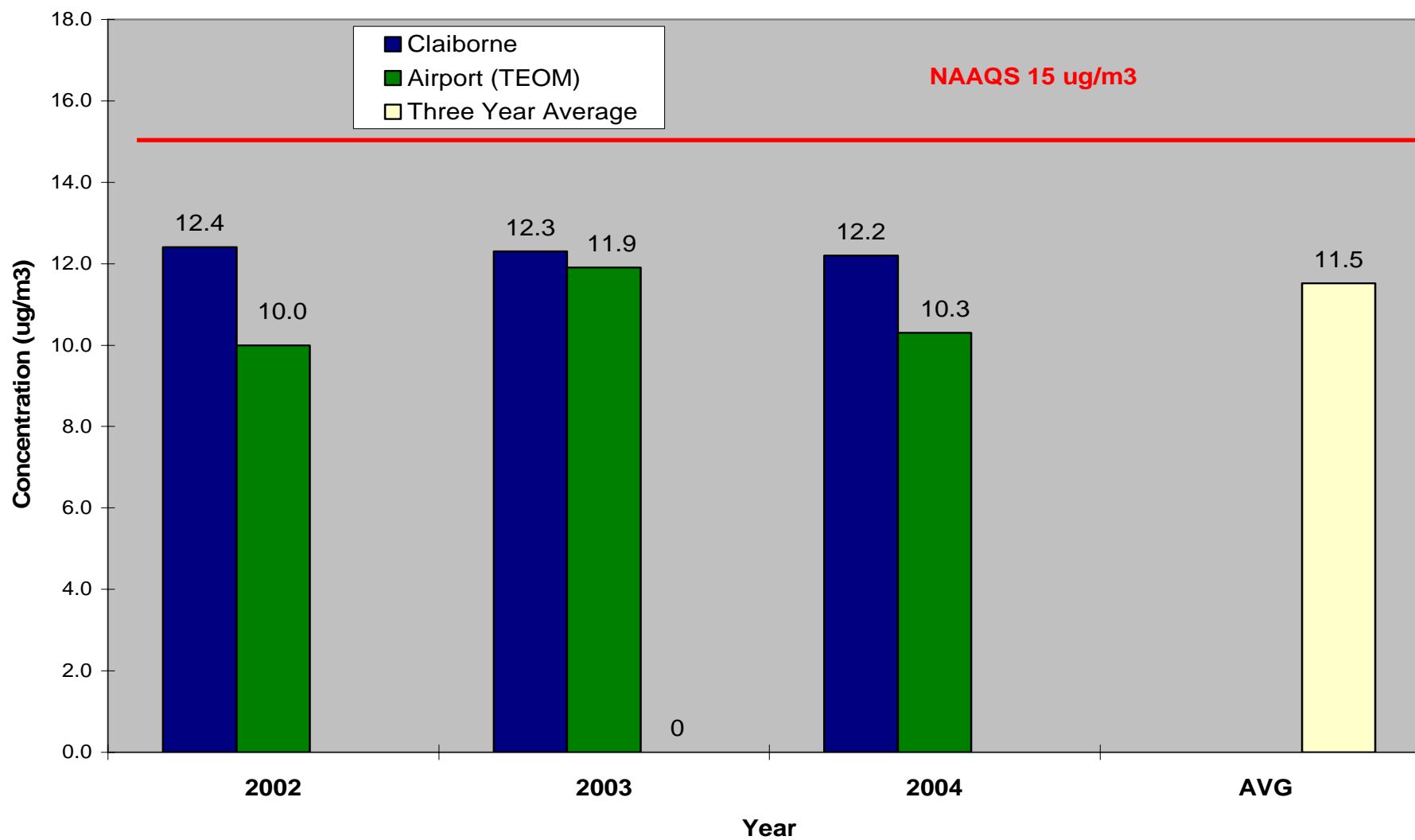


Figure 36: PM<sub>2.5</sub> Annual Average Concentration- Shreveport MSA

## PM 2.5 CONCENTRATION - ANNUAL AVERAGE HOUMA MSA

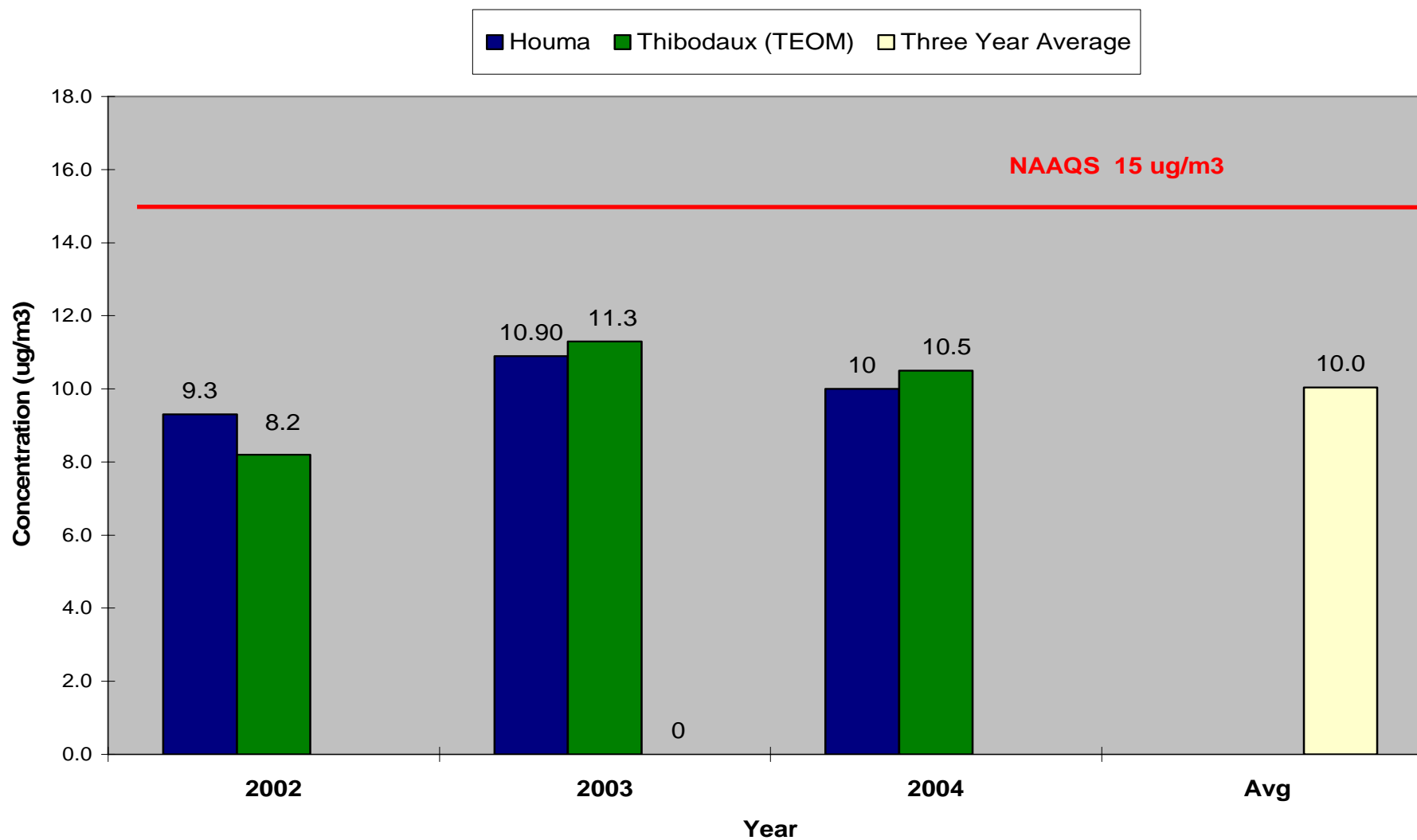


Figure 37: PM<sub>2.5</sub> Annual Average Concentration- Houma MSA

# PM 2.5 CONCENTRATION - ANNUAL AVERAGE LAFAYETTE MSA

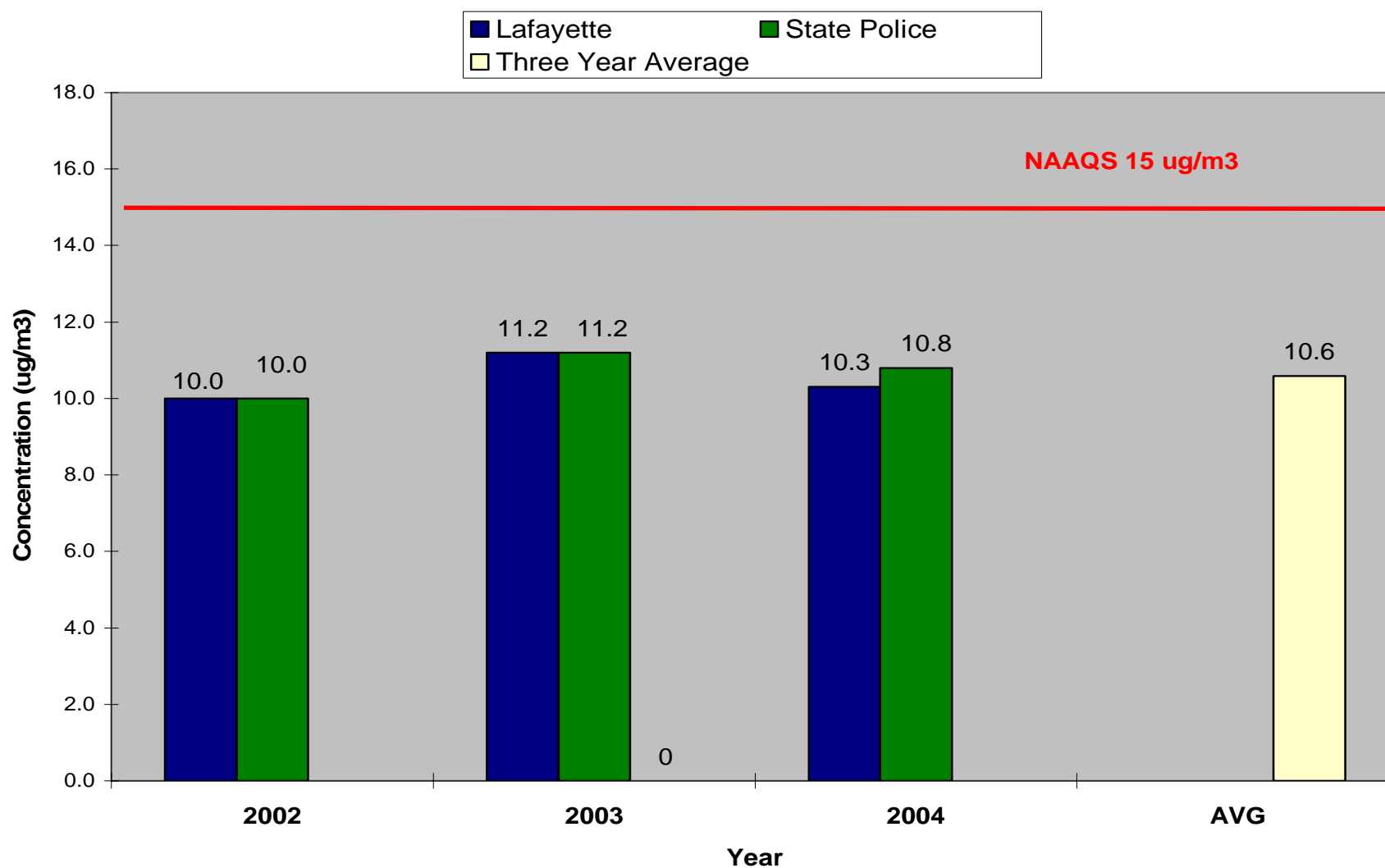


Figure 38: PM<sub>2.5</sub> Annual Average Concentration- Lafayette MSA

## PM 2.5 CONCENTRATION - ANNUAL AVERAGE ALEXANDRIA MSA

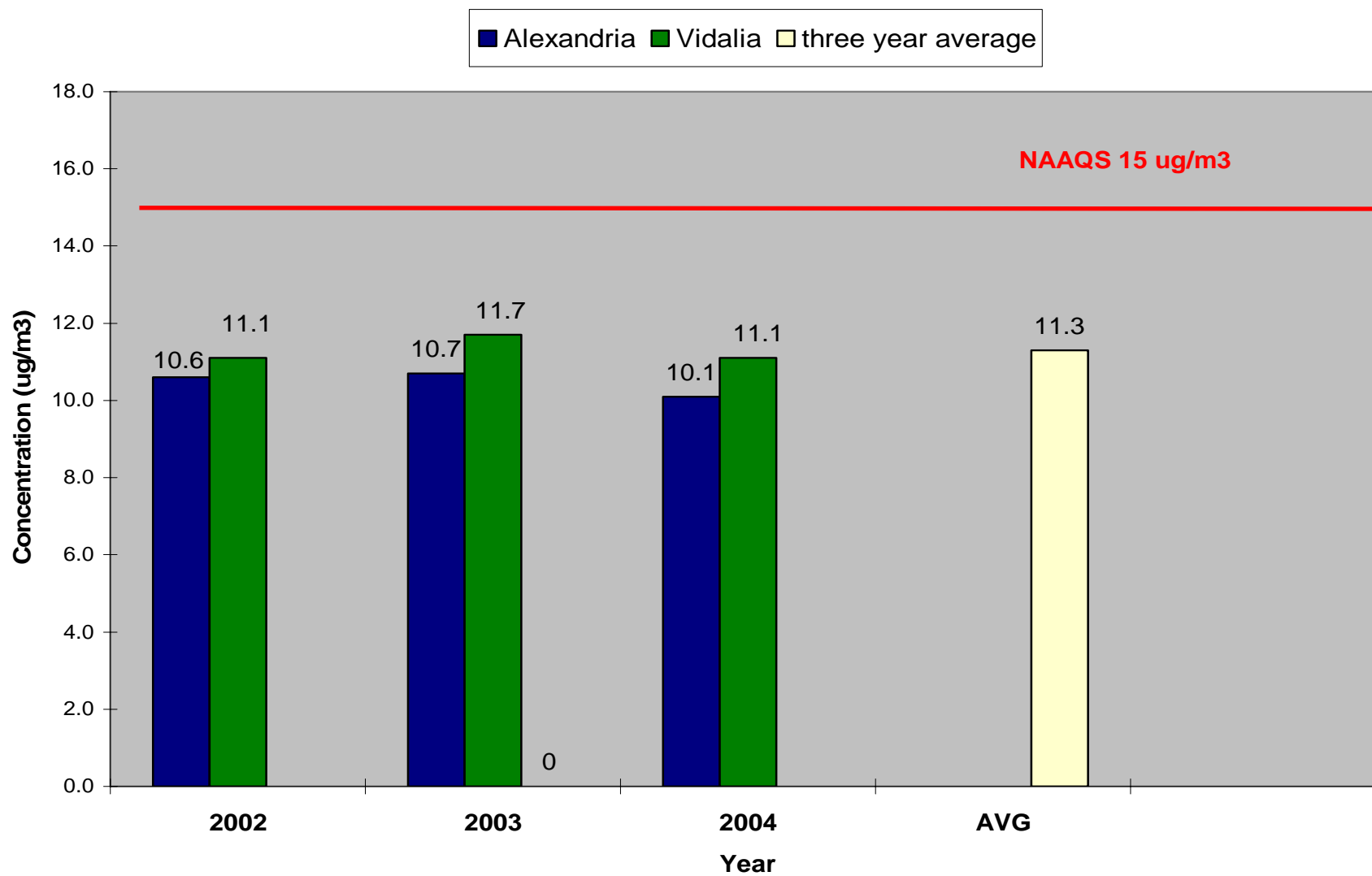


Figure 39: PM<sub>2.5</sub> Annual Average Concentration- Alexandria MSA



## PM 2.5 CONCENTRATION - ANNUAL AVERAGE MONROE MSA

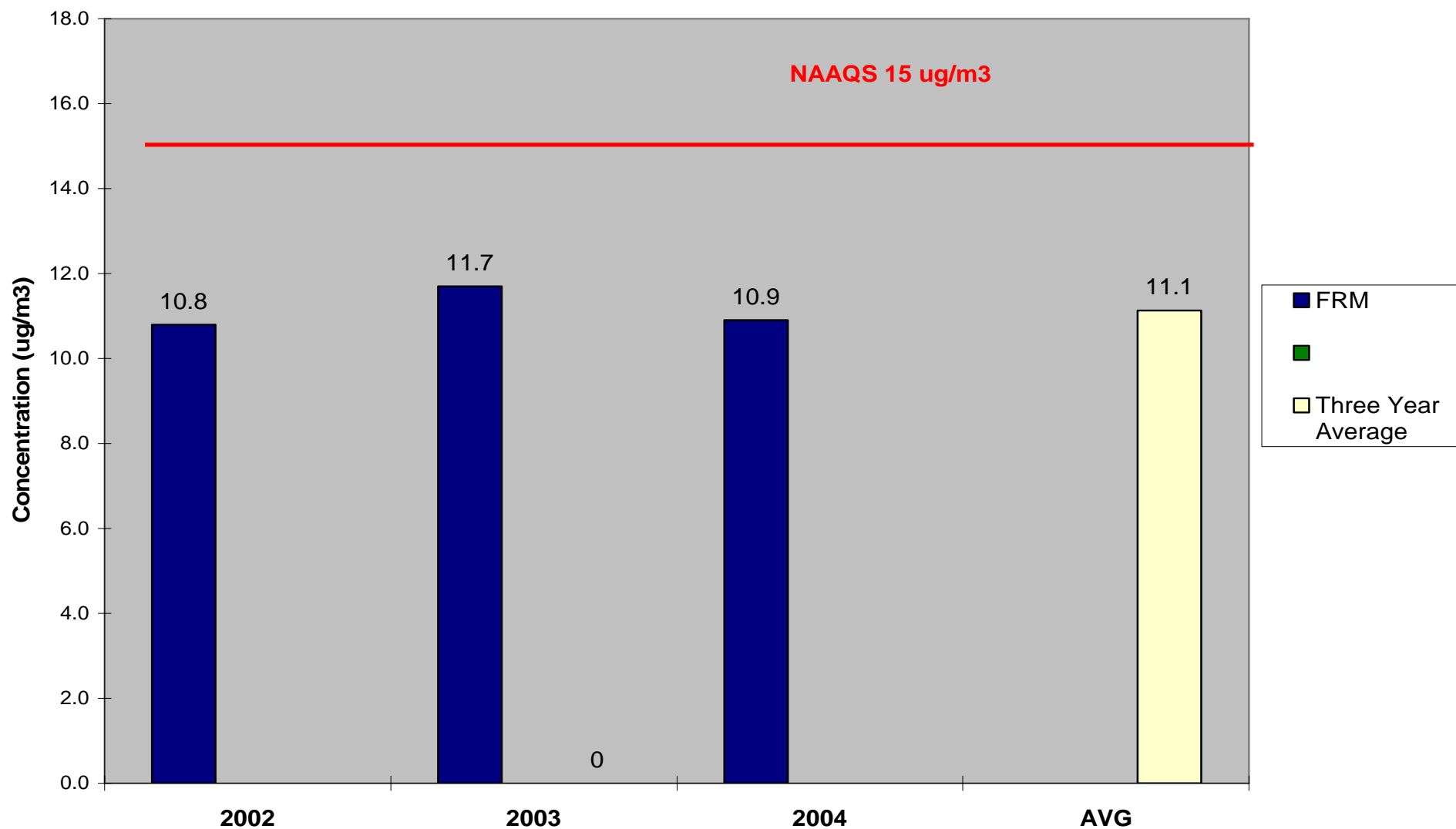


Figure 40: PM<sub>2.5</sub> Annual Average Concentration- Monroe MSA

# Louisiana PM 2.5 TEOM Concentration - Annual Mean

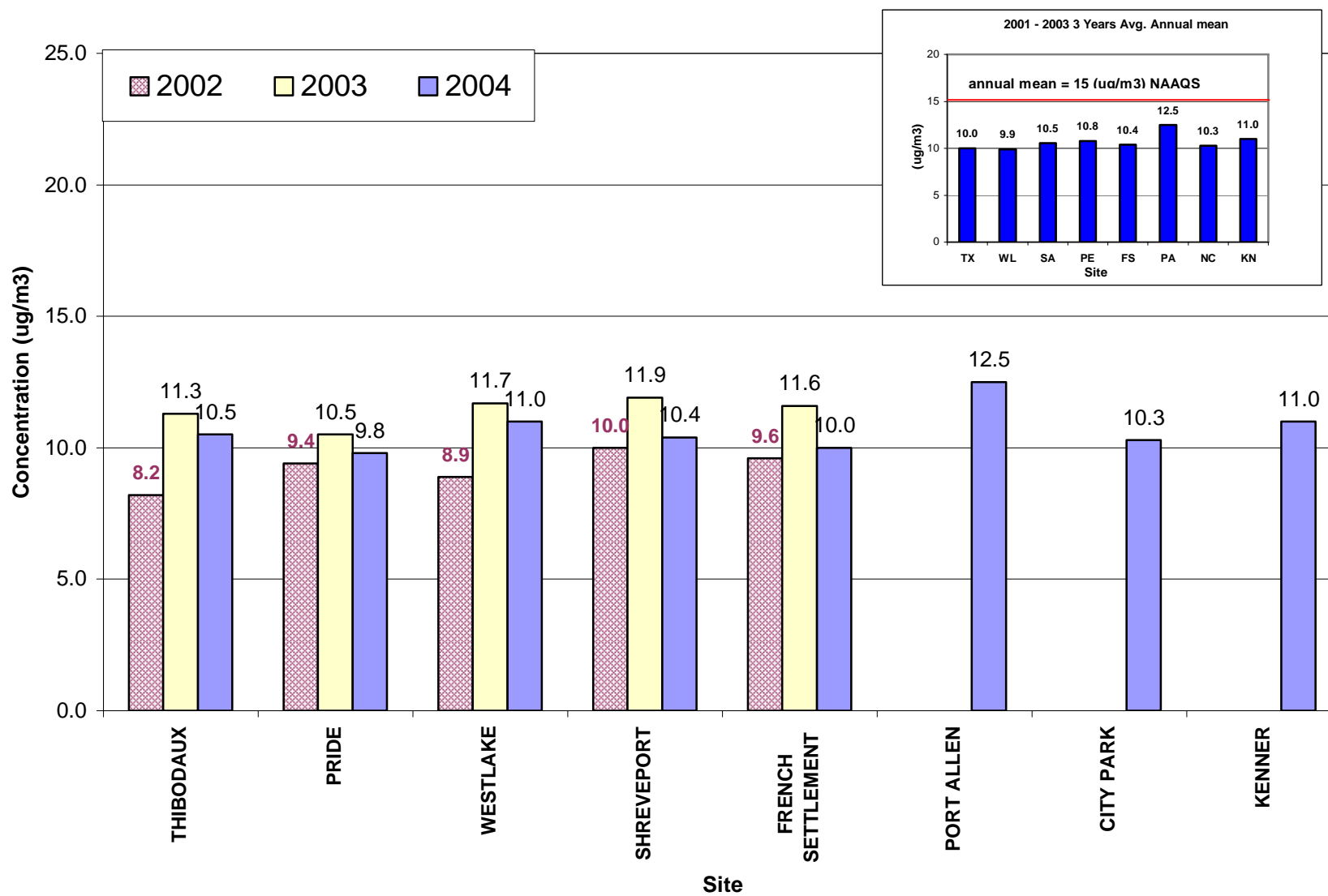


Figure 41: Louisiana PM<sub>2.5</sub> TEOM Concentration- Annual Mean

# Louisiana PM 2.5 TEOM Concentration - 24 hr Max

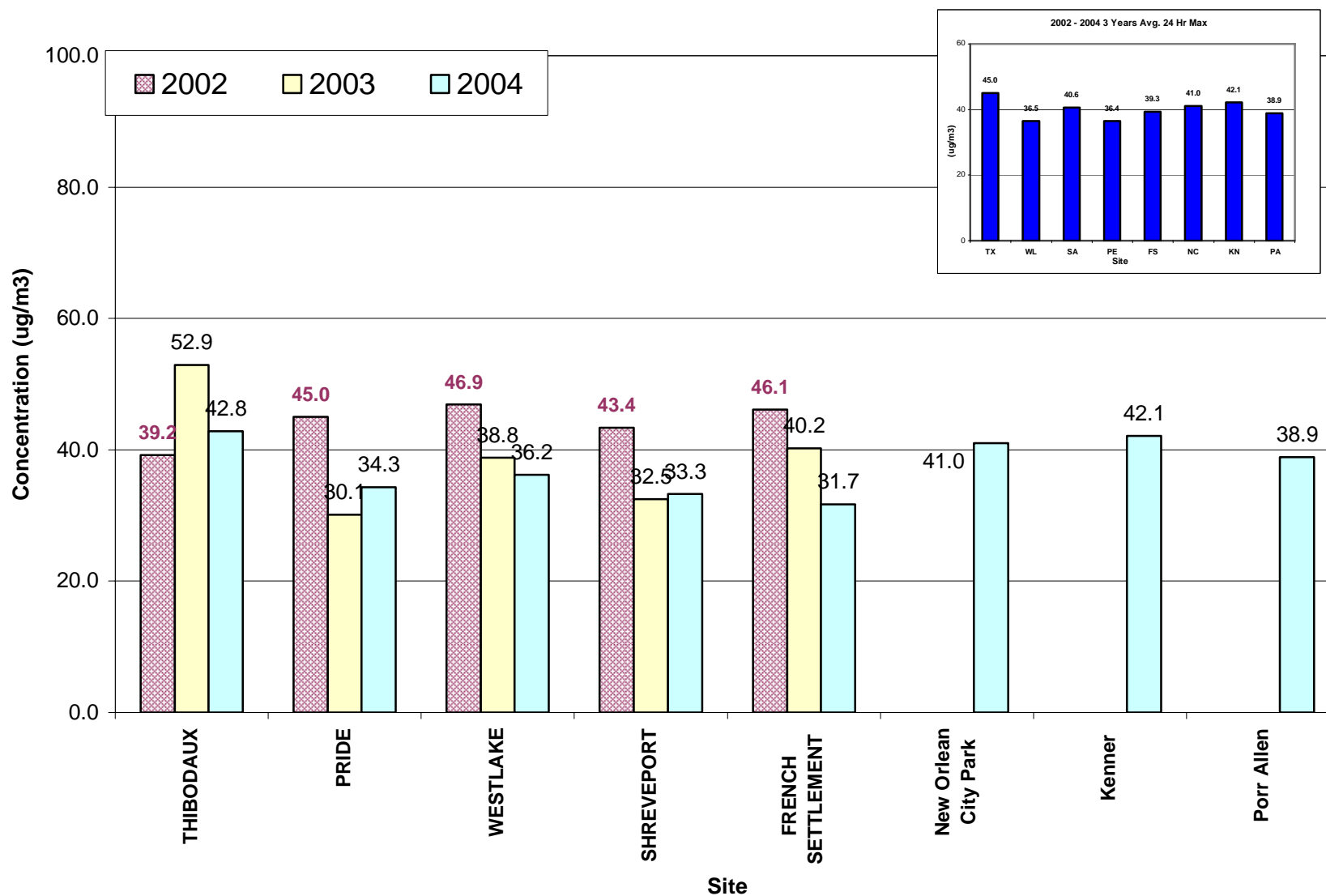


Figure 42: Louisiana PM<sub>2.5</sub> TEOM Concentrations- 24 Hr Max

## FRM MONITORS

Percent Change in Measured PM<sub>2.5</sub> Concentrations  
Annual Averages Statewide

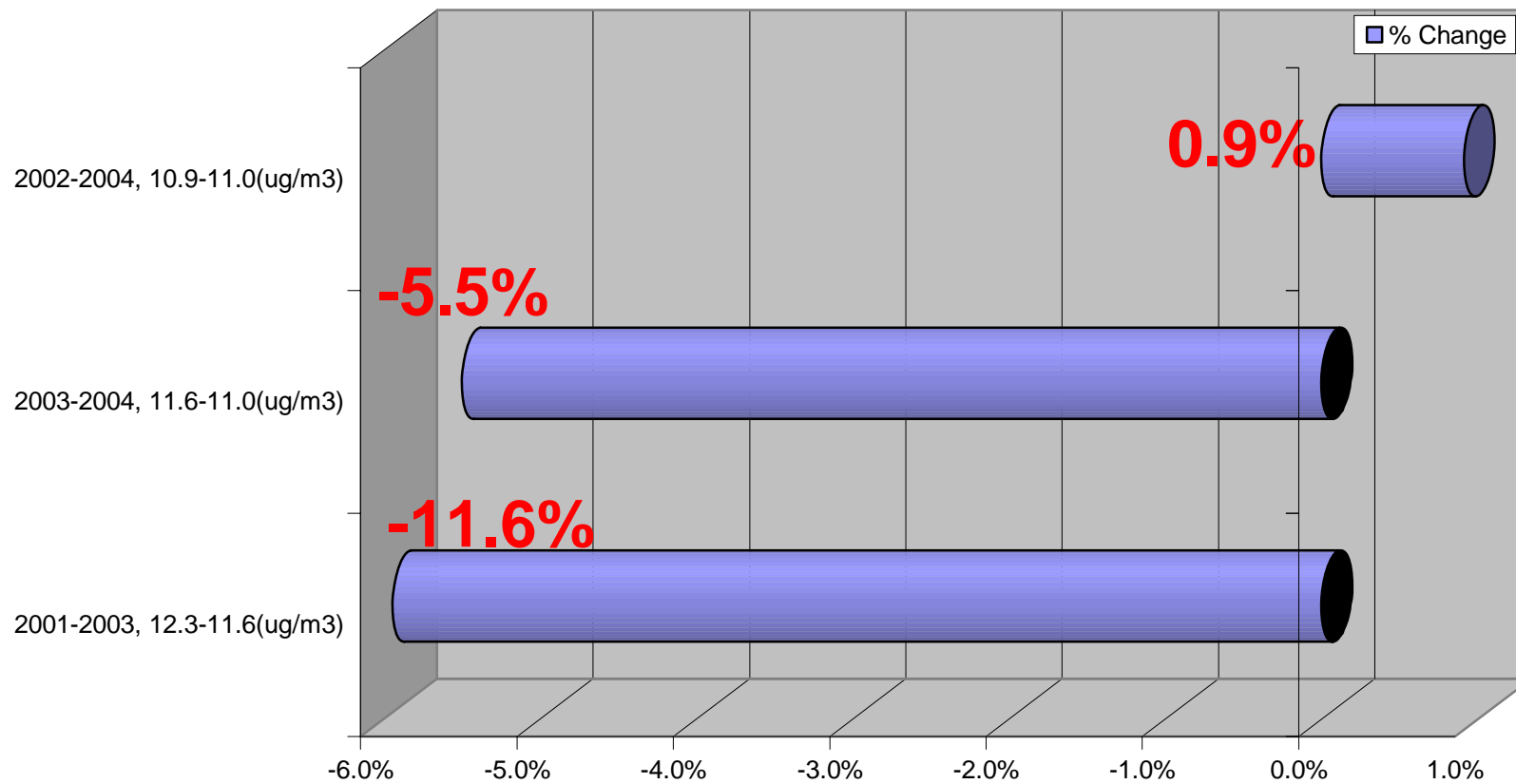


Figure 43: Percent Change in PM<sub>2.5</sub> Concentrations- FRM

## TEOM MONITORS

### Percent Change in Measured PM<sub>2.5</sub> Concentrations Annual Averages Statewide

\*note: Case & Air T has been changed to 35°C from 50°C, Cap T has been set off from 50°C at year 2003.

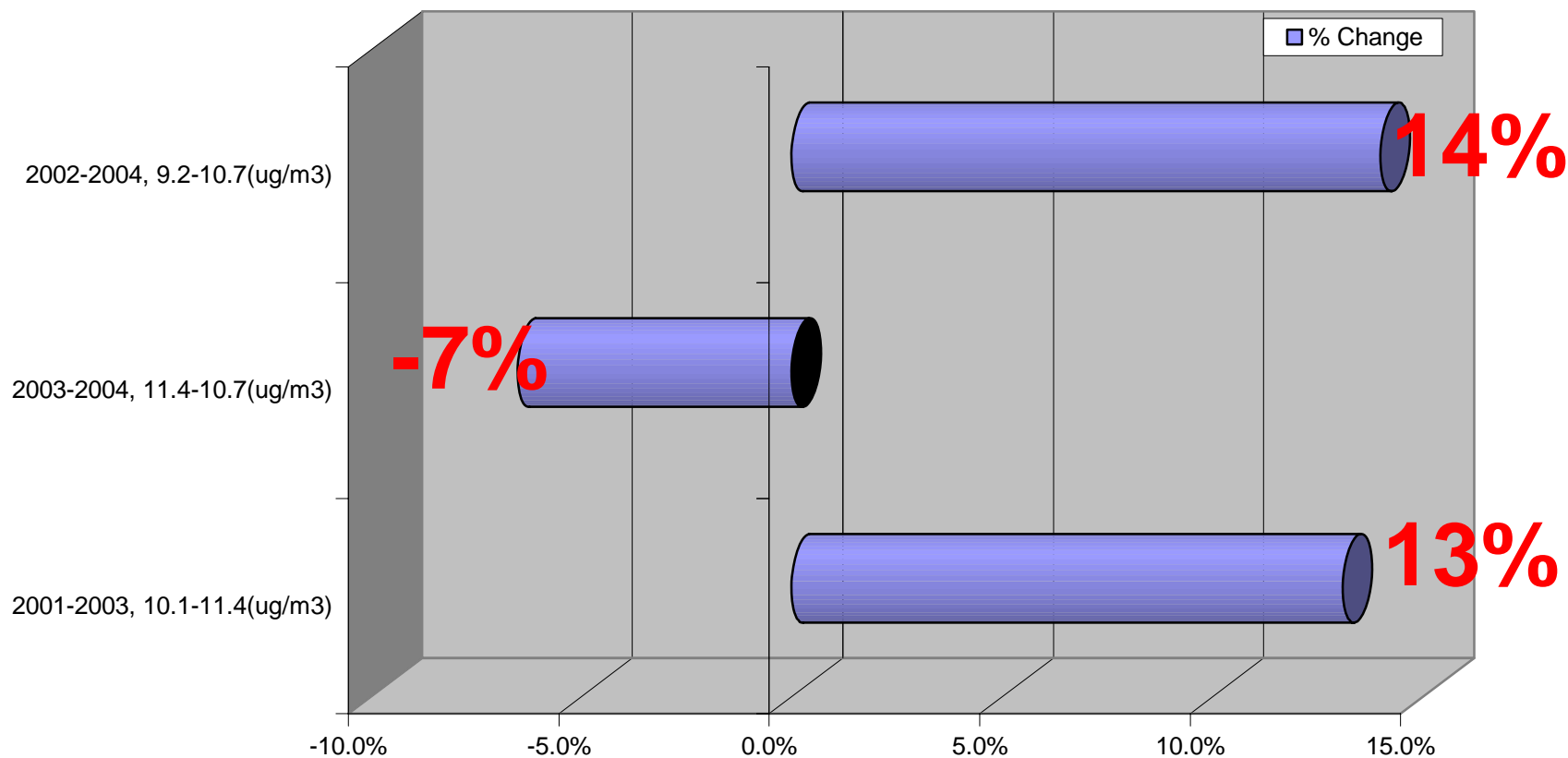
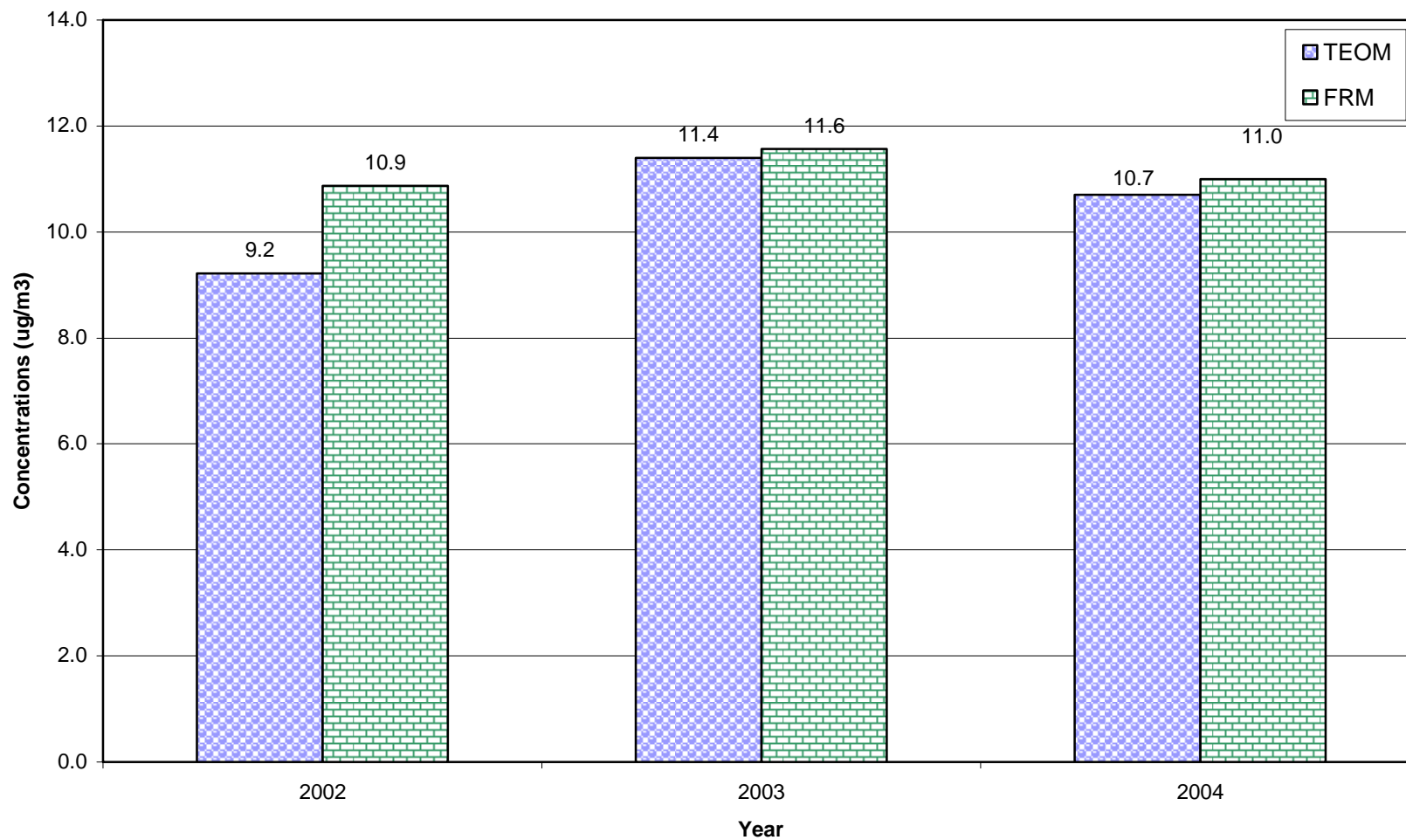


Figure 44: Percent Change in PM<sub>2.5</sub> Concentration- TEOM

### PM 2.5 Statewide Annual Mean



**Figure 45: PM<sub>2.5</sub> Statewide Annual Mean**

### 2004 Annual 24 Hr Max

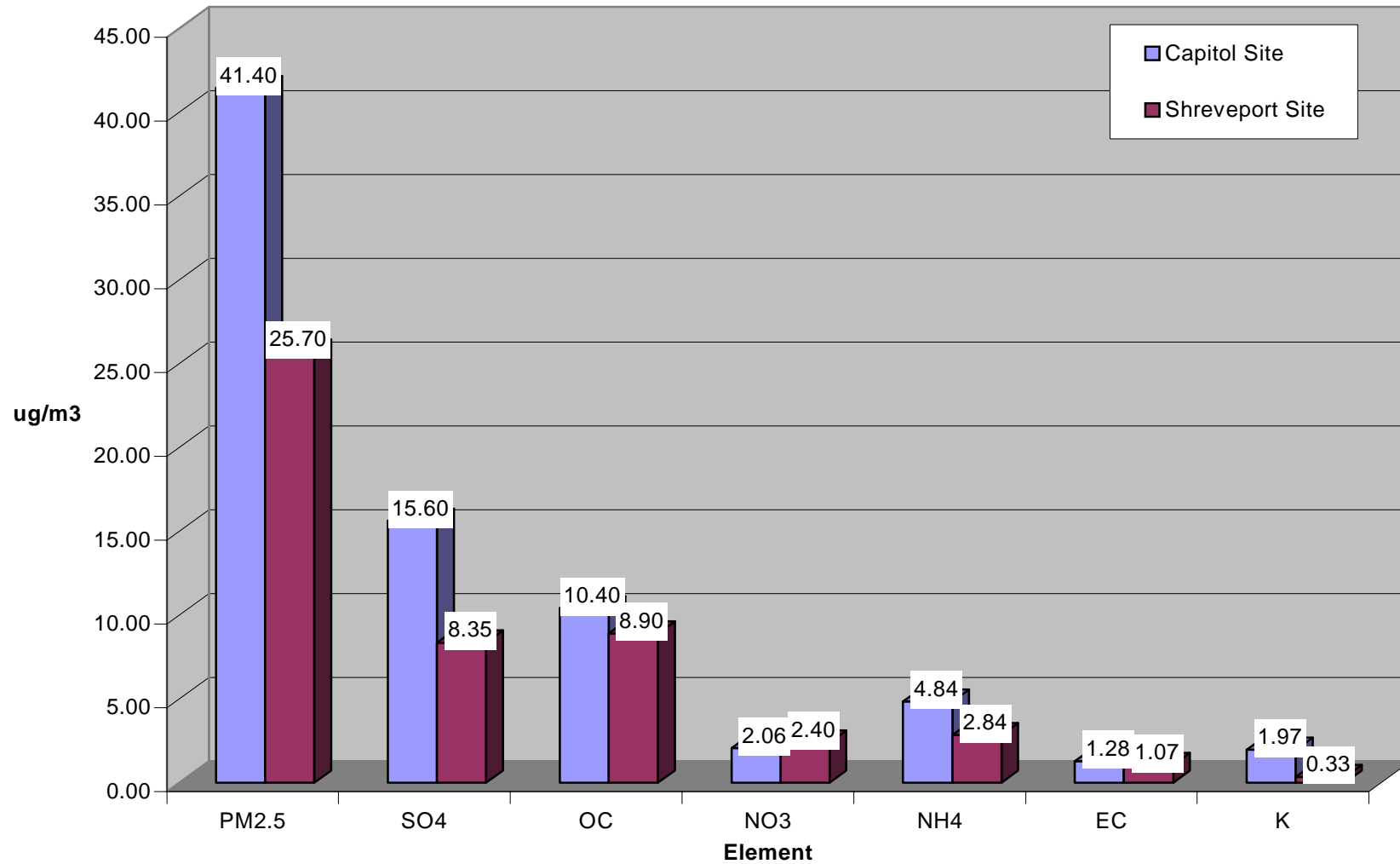


Figure 46: 2004 Annual 24 Hr Max

### 2004 Annual Mean

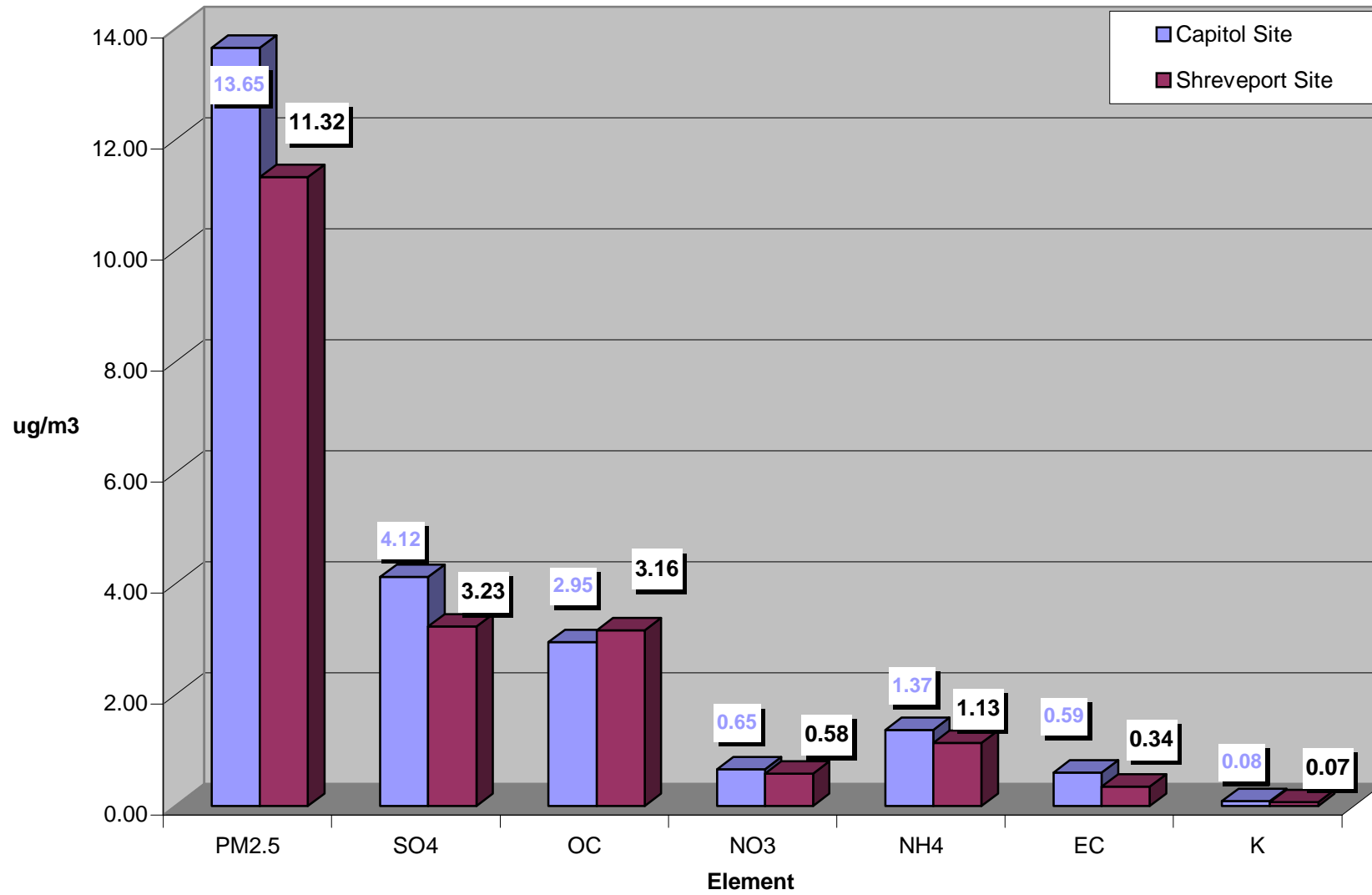
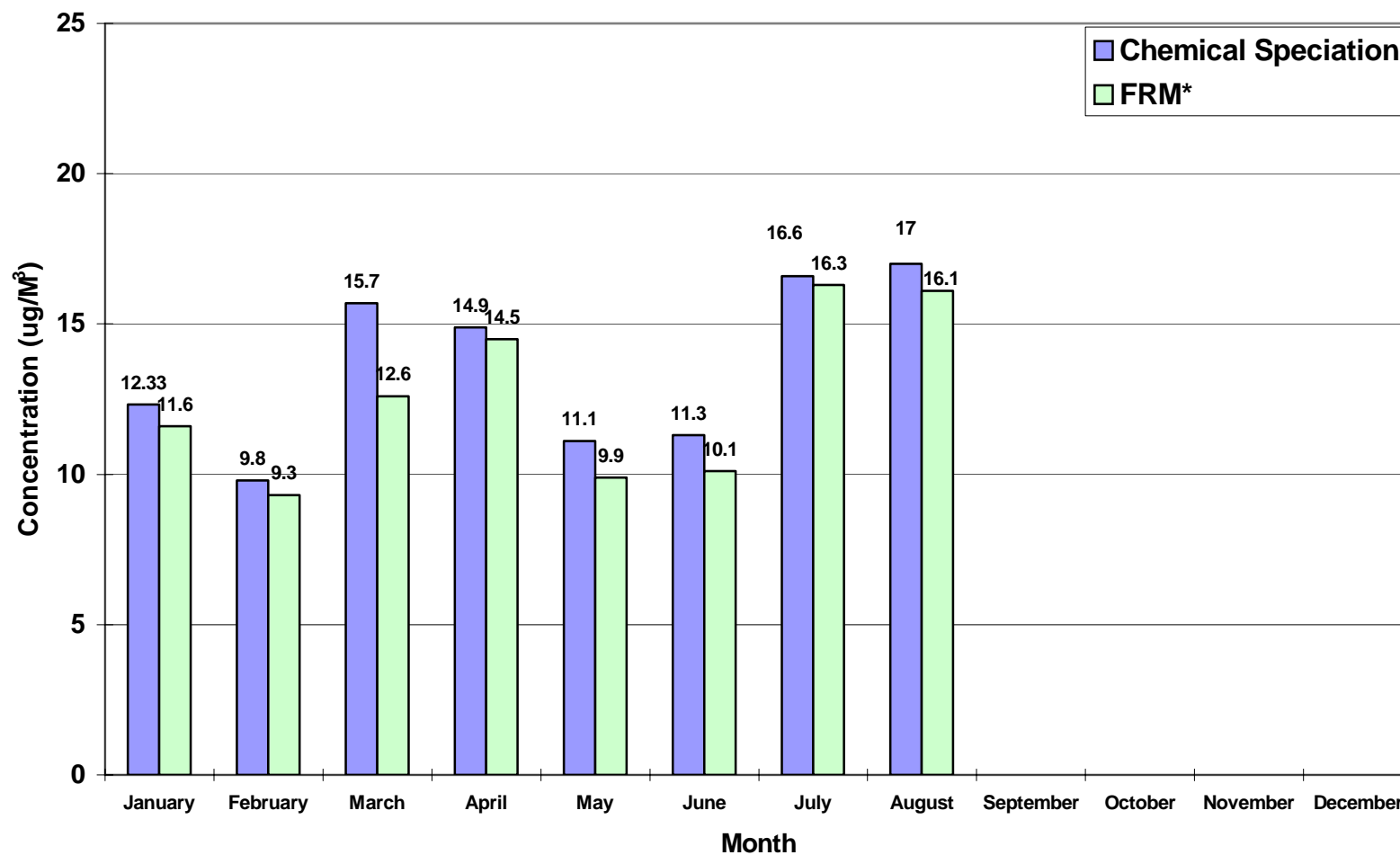


Figure 47: 2004 Annual Mean



### Monthly Mean of Mass Concentration Comparison Between Chemical Speciation and FRM at Capitol Site



\* Monthly data applied for FRM only based on the running days of the chemical speciation

\*\* There was insufficient data for speciation for the last four months due to equipment maintenance

Figure 48: Monthly Mean of Mass Concentration- Chemical Speciation vs. FRM at Capitol Site

# Monthly Mean of Mass Concentration Comparison at Shreveport Site 2004

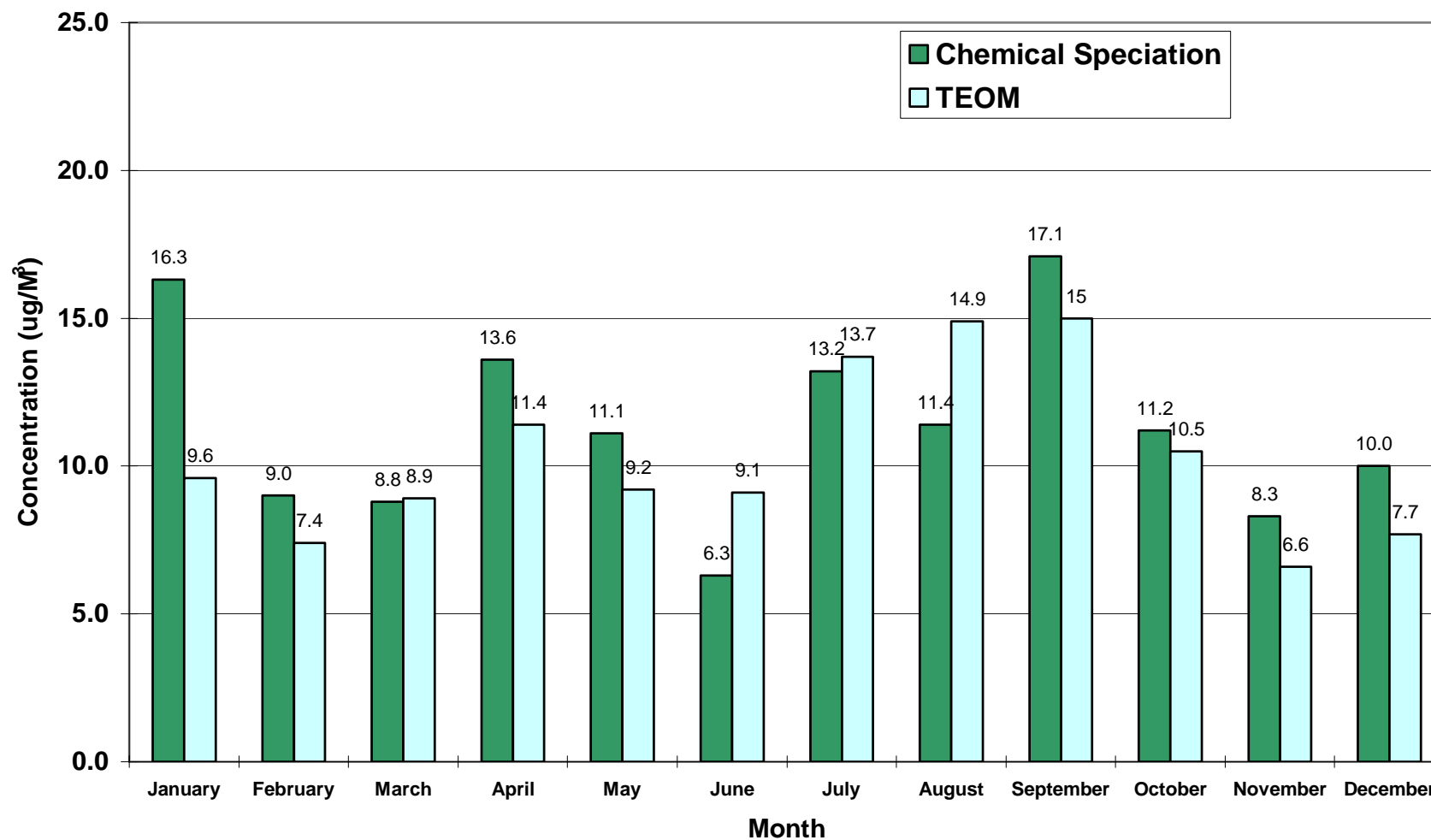


Figure 49: Monthly Mean of Mass Concentration- Chemical Speciation vs. TEOM at Shreveport Site

### 2002-2004 Speciation Maximum

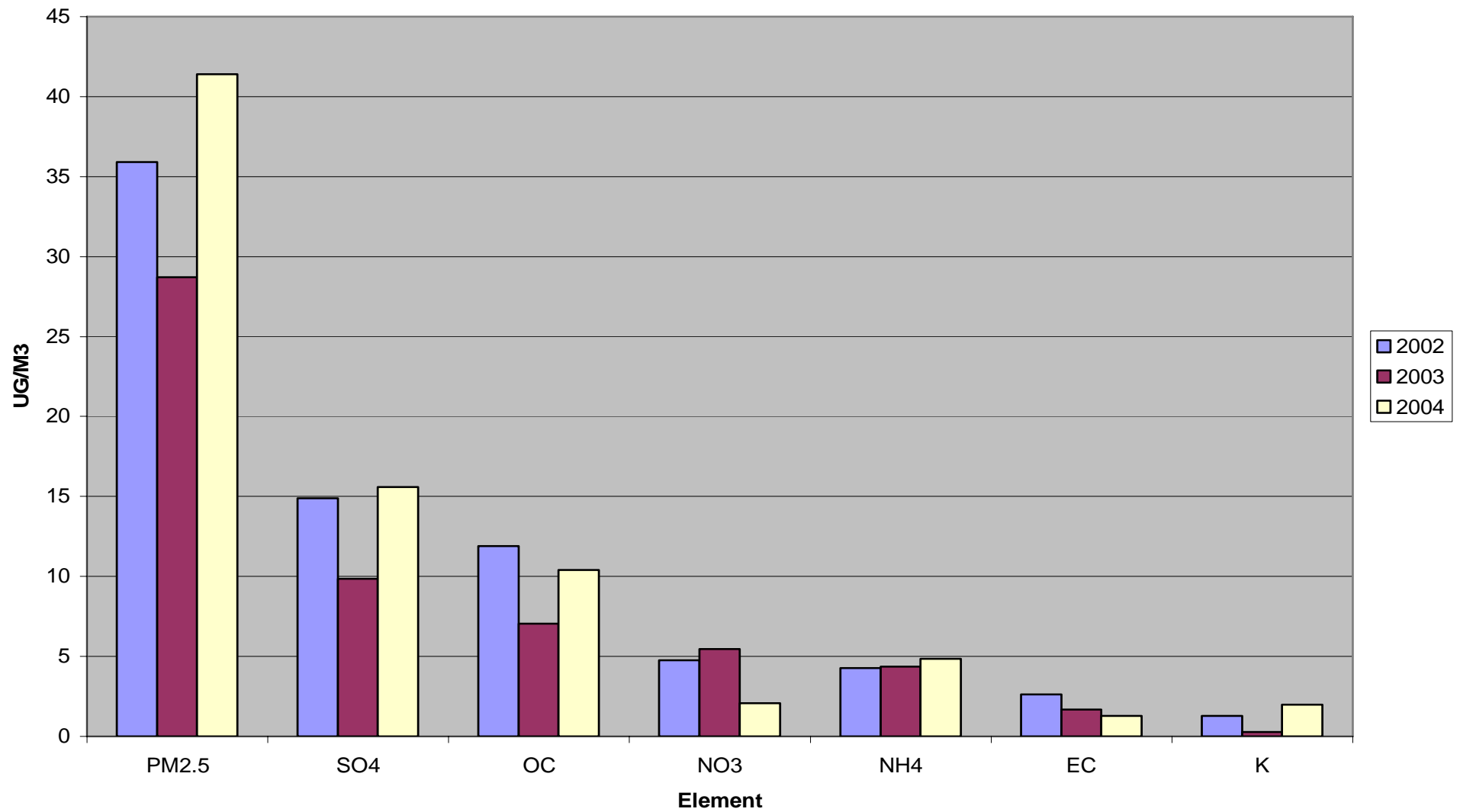


Figure 50: 2002-2004 Speciation Max

### Annual Mean Comparison

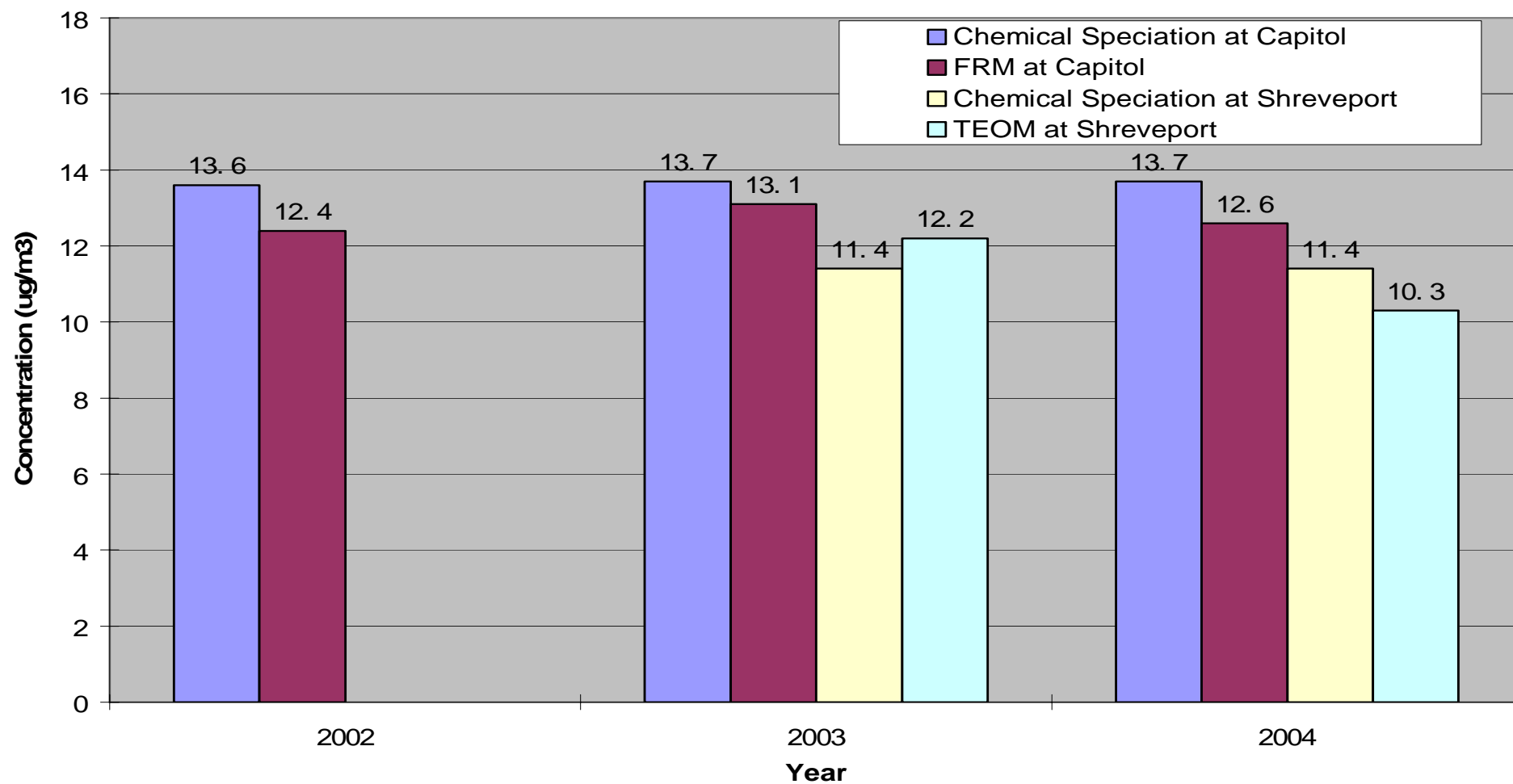


Figure 51: Annual Mean Comparison

### PM2.5 Speciation Annual Mean at Capitol Site

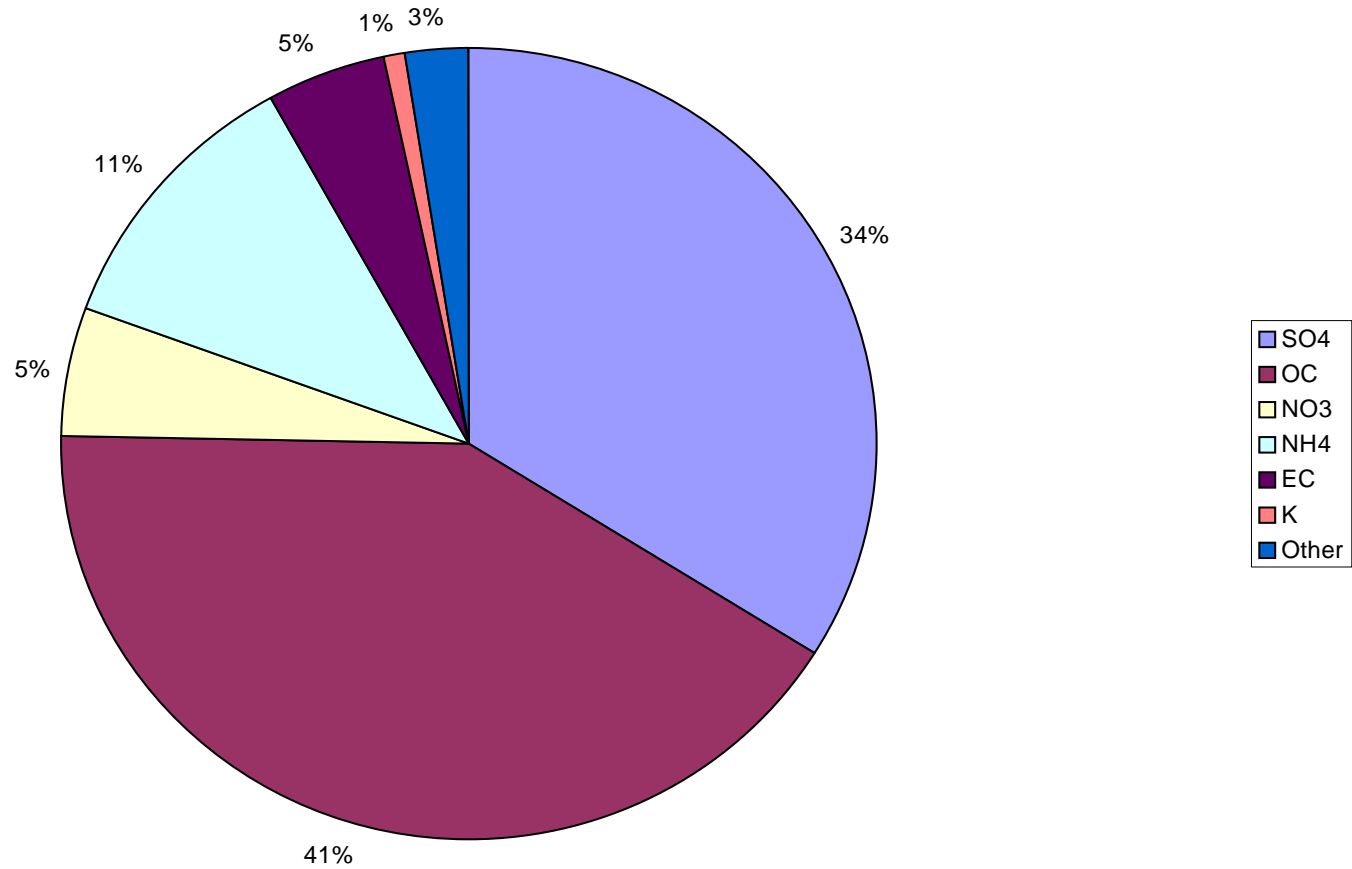


Figure 52: PM<sub>2.5</sub> Speciation Annual Mean- Capitol Site

2004 PM 2.5 Speciation Annual Mean at Shreveport site

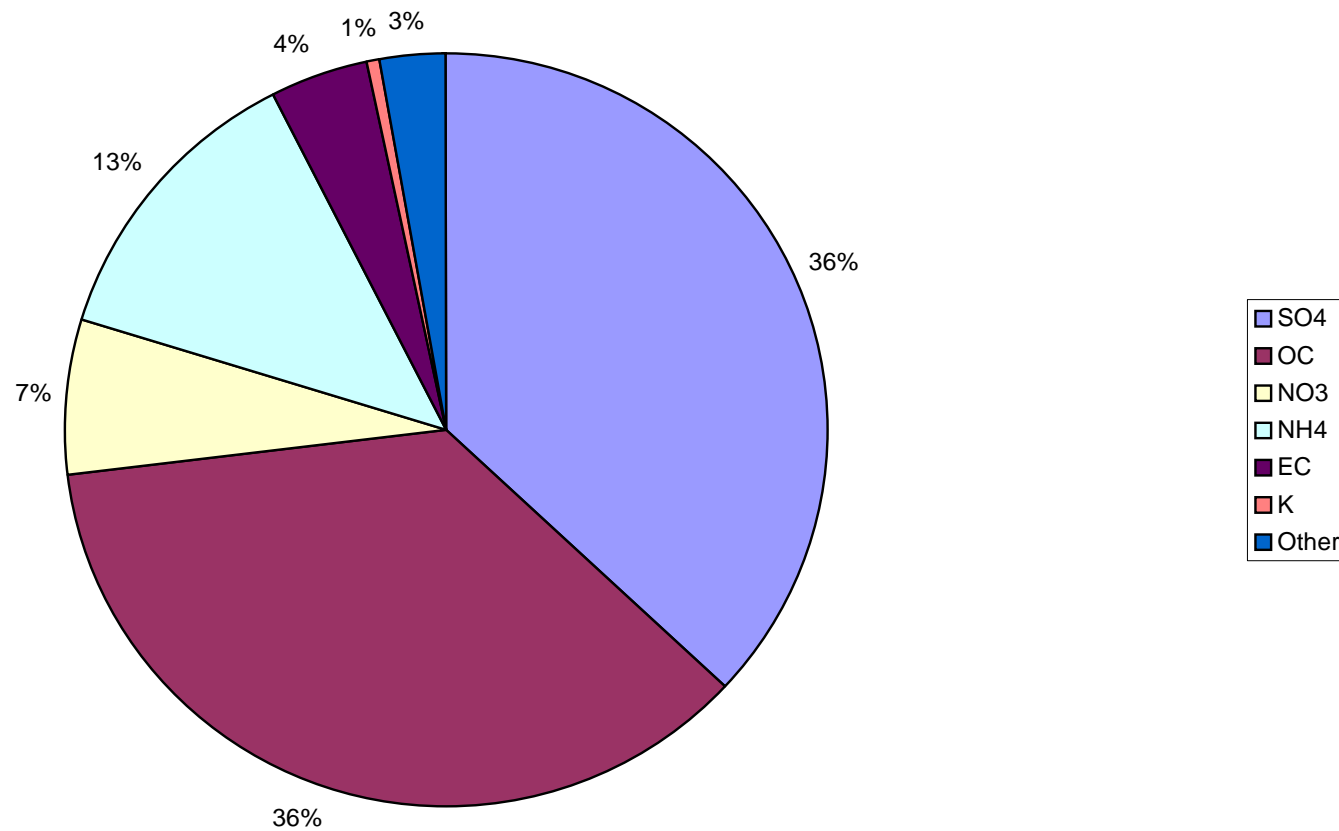


Figure 53: PM<sub>2.5</sub> Speciation Annual Mean – Shreveport Site

# **CRITERIA POLLUTANTS EMISSIONS INVENTORY**

The Emissions Inventory staff of the Air Quality Assessment Division is responsible for developing comprehensive criteria pollutant emissions inventories for the State of Louisiana. The emissions data are used for a variety of planning, regulatory and reporting purposes. The emissions staff works closely with the regulated community, trade groups and other state and federal agencies to develop and maintain high quality and current emissions data.

Detailed annual emissions data are maintained in the Emissions Inventory System (EIS) on nearly 900 major point sources. Emissions inventory data are also developed and maintained for area, mobile, and biogenic emissions sources in the non-attainment areas.

Major sources of criteria air pollutants must submit an inventory of annual emissions in the specified electronic EIS format by March 31 of the following year. Major sources of hazardous air pollutants as defined Section 112(a)(1) of the Federal Clean Air Act must also submit an EIS annual report, regardless of their criteria pollutant emissions.

A look at Louisiana's emissions inventory (Tables 12, 13 and 14 that follow) shows that, in general, emissions have remained constant for the period 2001-2003. This can also be appreciated in the following graphs, where the parishes with the highest eight emissions values are presented in bar-chart format for VOCs, NO<sub>x</sub>, CO and SO<sub>2</sub> in the following pages.

**Table 10: 2001 Certified Emissions of Criteria Pollutants for Louisiana  
(TONS PER YEAR)**

<b>Parish</b>	<b>VOC</b>	<b>NOx</b>	<b>CO</b>	<b>SO2</b>	<b>PM10</b>
<b>Acadia</b>	529.12	5262.52	1491.49	62	68.14
<b>Allen</b>	507	97	812	9	417
<b>Ascension</b>	3822.68	13299.4	7815.8	17119.3	2361.3
<b>Assumption</b>	364.09	840.85	650.61	0.02	483.8
<b>Avoyelles</b>	14	238	23	0	0
<b>Beauregard</b>	1601.39	4741.8	2817	555	1689.7
<b>Bienville</b>	451.7	3518.3	1316.2	0.2	23.6
<b>Bossier</b>	615.76	1675	688.2	33	25
<b>Caddo</b>	1600.4	1689.5	611.2	658.3	212.4
<b>Calcasieu</b>	9017.9	34137.26	10621.05	49172.1	3531.51
<b>Caldwell</b>	20	813	56	0	0
<b>Cameron</b>	2446.7	3308.6	1504.9	29	123.3
<b>Claiborne</b>	158.8	458.2	530.5	0.1	2.6
<b>De Soto</b>	2758	11657	5568	23309	1290
<b>East Baton Rouge</b>	5709.85	13696	11933.1	28852.5	2026.7
<b>East Carroll</b>	22	389	71	0	6
<b>East Feliciana</b>	594.4	4434	375	0	8
<b>Evangeline</b>	116	1095	2641	11976	233
<b>Franklin</b>	27	336	76	0	8
<b>Grant</b>	359	1545	1186	5	252
<b>Iberia</b>	1195.68	2924.83	1787.9	9	802.78
<b>Iberville</b>	2773.43	18965.84	7781.87	1821.72	754.52
<b>Jackson</b>	645	1764	5120	166	1808
<b>Jefferson</b>	1163.22	10967.88	2776.03	885.79	246.19
<b>Jefferson Davis</b>	236	1066	249	4	11
<b>Lafayette</b>	132.7	1522.9	154.6	11.4	12.3
<b>Lafourche</b>	1235.35	2097	1490	19	328.56
<b>La Salle</b>	317	1306	2317	10	866
<b>Lincoln</b>	679.8	1752.2	574.2	279.5	283.3
<b>Livingston</b>	500.93	145.44	481.37	3	130.43
<b>Morehouse</b>	1396	2290	1542	1570	599
<b>Natchitoches</b>	825	2958	3394	115	454
<b>Orleans</b>	337.89	6530.75	1721.63	3516	558.15
<b>Ouachita</b>	4133.82	9018.47	4833.75	575.43	718.4
<b>Plaquemines</b>	3759.22	18102.36	6550.54	3879.08	789.73
<b>Pointe Coupee</b>	702.17	21853.04	2300.01	50413	3409.01



<b>Rapides</b>	1420	8987	3226	13724	910
<b>Red River</b>	111	34	218	97	107
<b>Richland</b>	102	1959	491	1	55
<b>St. Bernard</b>	3252	8654	12596	5847	715
<b>St. Charles</b>	7526.92	33705.77	8082.38	10727.08	1863.99
<b>St. Helena</b>	215	3379	406	0	4
<b>St. James</b>	1340.17	6012.91	2701.55	13950.15	1441.59
<b>St. John the Baptist</b>	1117.29	3066.5	1168.5	305.16	194.9
<b>St. Landry</b>	843	2849	980	902	256
<b>St. Martin</b>	381	699	507	0	116
<b>St. Mary</b>	1456.49	10537.47	6902.59	25185.3	604.32
<b>Sabine</b>	936	188	1073	11	351
<b>Tangipahoa</b>	282.87	76	457	4	146.02
<b>Terrebonne</b>	2489	4088	2638	7	51
<b>Union</b>	310.12	316.4	436	1.16	54.5
<b>Vermilion</b>	800.02	3474.32	1105.6	5	70.29
<b>Vernon</b>	137.32	291	159.9	58.4	5
<b>Washington</b>	1766	4803	4589	1227	808
<b>Webster</b>	1714	2015.7	1715	5.6	251.1
<b>West Baton Rouge</b>	1284.25	1829.58	1421.77	9481.02	640.6
<b>West Carroll</b>	56	1478	254	0	10
<b>West Feliciana</b>	613	1036	1333	151	188
<b>Winn</b>	615	185	780	14	314
<b>Portable Sources</b>	95.73	529.6	229.01	74.77	53.59
	<b>79633</b>	<b>306690</b>	<b>147332</b>	<b>276837</b>	<b>33744</b>

**Table 11: 2002 Certified Emissions of Criteria Pollutants for Louisiana  
(TONS PER YEAR)**

<b>Parish</b>	<b>VOC</b>	<b>NO<sub>x</sub></b>	<b>CO</b>	<b>SO<sub>2</sub></b>	<b>PM<sub>10</sub></b>	<b>PM<sub>2.5</sub></b>	<b>Ammonia</b>
<b>Acadia</b>	436.1	4711.1	1499.8	16.3	78.3	74	20
<b>Allen</b>	555	98	815	16	413	3	0
<b>Ascension</b>	3400.4	12978	6947.2	17994.6	1856.2	1109.3	4874
<b>Assumption</b>	394	903.92	701.85	0.01	611.62	378.62	0
<b>Avoyelles</b>	13	193	19	0	0	0	0
<b>Beauregard</b>	1614.24	4646.67	2899.82	172.24	1690.98	78	59
<b>Bienville</b>	514.7	2001.3	956.7	1.16	53.6	45.6	0
<b>Bossier</b>	689.17	1752.55	794.84	32	36.08	16	0
<b>Caddo</b>	2159.39	1376.71	489.92	375	166.26	108	17
<b>Calcasieu</b>	9530.67	34982.3	10808.73	53680.65	3929.46	2102.31	69.5
<b>Caldwell</b>	10	346	14	0	3	3	0
<b>Cameron</b>	2144.13	3090.67	2068.43	32	137	129	0
<b>Claiborne</b>	137.4	447.4	495	0.2	15	15	0
<b>De Soto</b>	2684	12222	4237	19943	735	447	81
<b>East Baton Rouge</b>	5527.9	12729.58	12742.93	30345.81	2015.5	1545.93	134.01
<b>East Carroll</b>	39	435	72	0	6	6	0
<b>East Feliciana</b>	694.1	6202.46	511.07	0.49	10.71	10.71	0
<b>Evangeline</b>	118.98	1399.91	2625.36	10526	266.01	239.01	54.1
<b>Franklin</b>	59	410	95	0	11	11	0
<b>Grant</b>	241	676	811	4	212	197	2
<b>Iberia</b>	1349	2556	1907.7	8	845.02	374	0
<b>Iberville</b>	2372.06	14781.86	6016.61	629.73	937.03	726.89	12
<b>Jackson</b>	691	1772	5211	176	1894	1136	177
<b>Jefferson</b>	1044.44	23466.56	1694.9	993.39	315.11	257.84	133.16
<b>Jefferson Davis</b>	339	1167	401	4	11	2	0
<b>Lafayette</b>	141.2	848.1	249.8	11	12.3	2.3	0
<b>Lafourche</b>	1037.95	1831.7	1553.8	19.1	313.08	33	0
<b>La Salle</b>	36	84	16	0	1	1	0
<b>Lincoln</b>	572.34	1995.08	576.03	310.87	278.95	70	0
<b>Livingston</b>	451.38	212.15	515.13	3	119.39	28.7	0
<b>Morehouse</b>	1484	2039	1395	2534	725	566	103
<b>Natchitoches</b>	798	2674	3314	127	430	294	36
<b>Orleans</b>	319.3	6992.78	1718.66	56.01	459.15	213.15	19
<b>Ouachita</b>	3089.79	9516.79	7023.77	2174.43	1226.75	1048.75	307.27
<b>Plaquemines</b>	3861.24	15748.65	5620.53	3816.06	714.76	686.79	0
<b>Pointe Coupee</b>	704.12	20565	2351.48	52047.27	3328.42	154.13	0

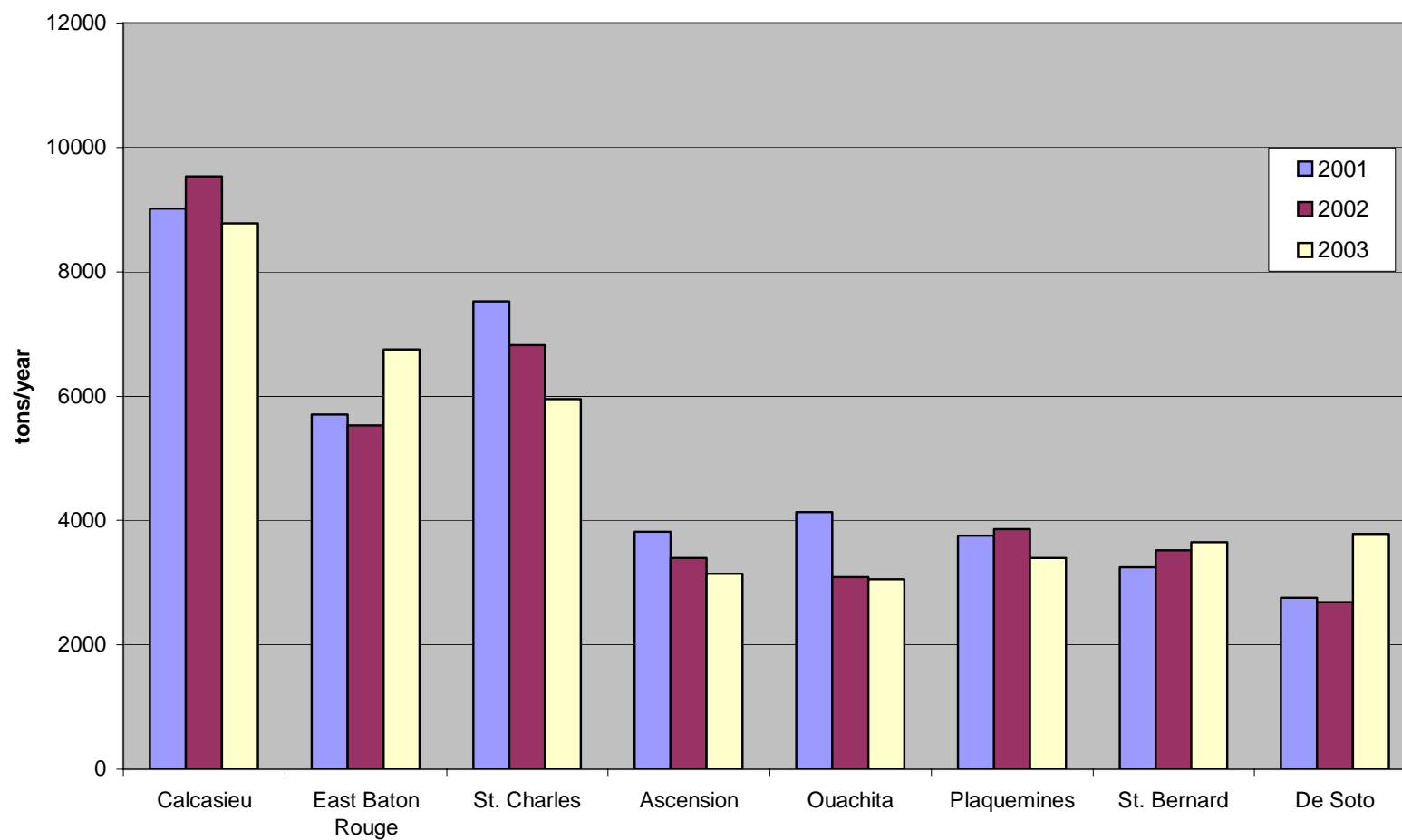
<b>Rapides</b>	1360	9847	3227	15003.3	866.5	318.5	42
<b>Red River</b>	122	39	265	2	132	71	0
<b>Richland</b>	123.71	1466.34	493.27	0.8	18	18	0
<b>St. Bernard</b>	3522	7496	14081	6925	790.04	571.33	124
<b>St. Charles</b>	6823.65	37722.62	8015.17	7736.9	1619.77	767.93	1989.4
<b>St. Helena</b>	259.99	4634.93	552.89	0.31	19.82	19.82	0
<b>St. James</b>	1418.26	6208.13	3371.88	21658.07	1685.3	948.7	803
<b>St. John the Baptist</b>	1081.71	2620.7	1385.38	229.48	235.88	169.2	15.04
<b>St. Landry</b>	896.42	1990.75	832.54	633.85	268.33	225.33	2
<b>St. Martin</b>	407	591	477	0	178	85	0
<b>St. Mary</b>	1611.93	10365.79	6860.08	26063.88	584.51	378.58	0
<b>Sabine</b>	861	193	1036	10	319	56	0
<b>Tangipahoa</b>	255	53	332	3	111.02	66	0
<b>Terrebonne</b>	2164.65	4535.58	2808.82	15.33	62.42	16.24	0
<b>Union</b>	420	196	169	0	74	6	0
<b>Vermilion</b>	914	3794	1251	7.03	75.1	75.1	0
<b>Vernon</b>	135.5	204.1	129.5	29.7	5	5	10
<b>Washington</b>	1672	4306	4709	1048	829	757	54
<b>Webster</b>	1950.6	1862.2	1827.9	16.6	295.9	7.9	0
<b>West Baton Rouge</b>	1270.05	1713.44	1553.45	9762.36	684.13	387.64	4
<b>West Carroll</b>	42	1248	204	0	8	8	0
<b>West Feliciana</b>	605	986	1388	161	199	118	28
<b>Winn</b>	632	167	668	11	303	158	0
<b>Portable Sources</b>	69.05	483.84	344.09	73.01	35.37	8.42	0
	<b>77871</b>	<b>310578</b>	<b>145152</b>	<b>285440</b>	<b>33257</b>	<b>17356</b>	<b>9169</b>

**Table 12: 2003 Certified Emissions of Criteria Pollutants for Louisiana**  
(tons per year)

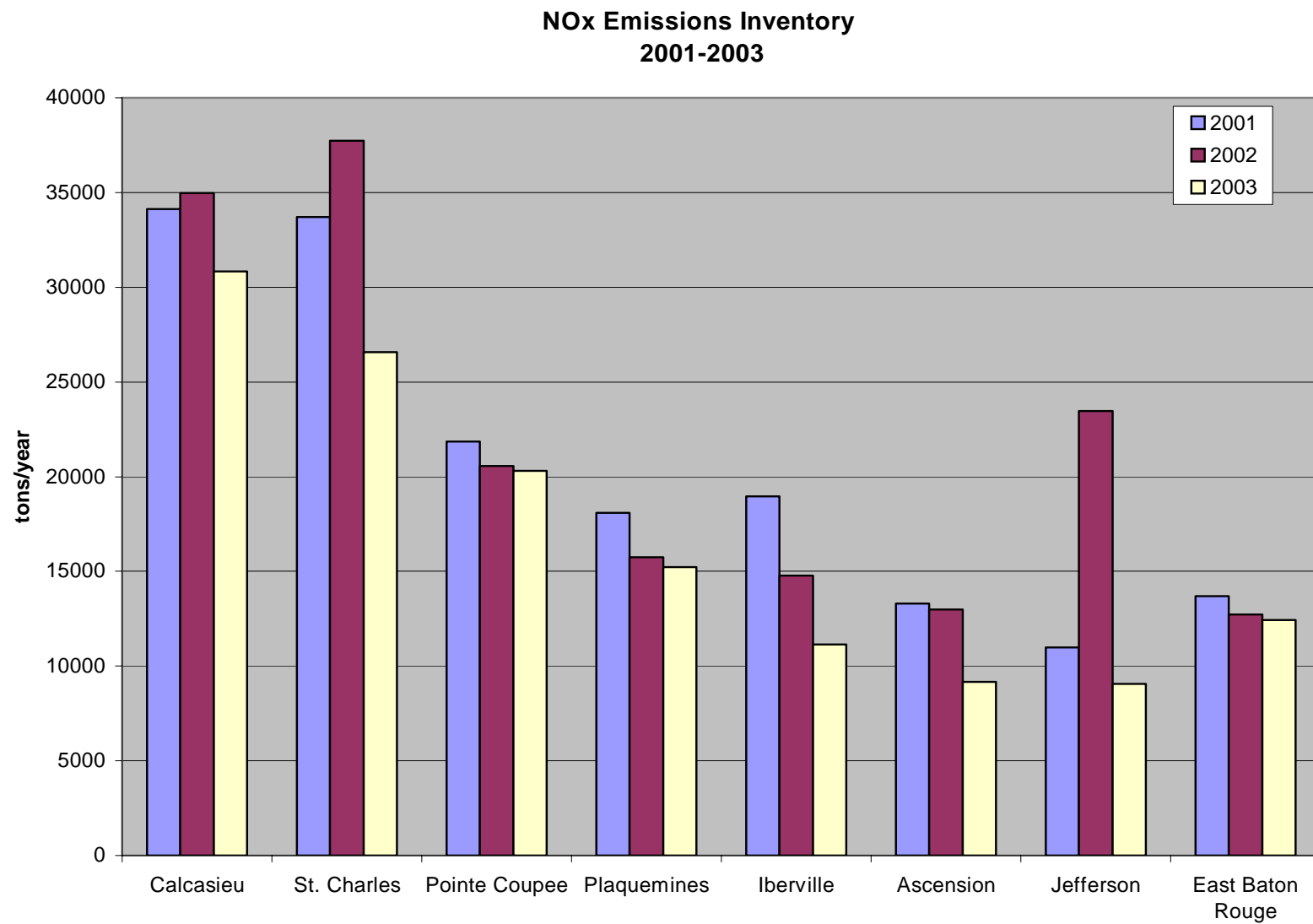
<b>Parish</b>	<b>Total VOC</b>	<b>NO<sub>x</sub></b>	<b>CO</b>	<b>SO<sub>2</sub></b>	<b>PM<sub>10</sub></b>	<b>PM<sub>2.5</sub></b>	<b>Ammonia</b>
<b>Acadia</b>	453	4784	1797	18	120	100	32
<b>Allen</b>	112	139	374	25	125	123	0
<b>Ascension</b>	3139.38	9172.06	5985.16	19114.95	1498.2	1119.16	3756.94
<b>Assumption</b>	514.67	651.53	590.54	0	367	191	0
<b>Avoyelles</b>	24	186	51	0	2	0	0
<b>Beauregard</b>	1610.97	4685.7	2924.6	615.8	1731.22	646.4	61
<b>Bienville</b>	517.29	1819.44	847.26	0.29	50.34	46.84	0
<b>Bossier</b>	676	1509	929	36	39.08	20	0
<b>Caddo</b>	1938	1273	432	371	141	115	39
<b>Calcasieu</b>	8780.41	30832.35	10971.89	46080.53	4131.1	2665.4	327.03
<b>Caldwell</b>	13	497	21	0	0	5	0
<b>Cameron</b>	4076.34	2601.3	2004.31	7	133	18	4
<b>Claiborne</b>	175.4	503.13	535.97	0.21	2.58	15.5	0.08
<b>De Soto</b>	3787.6	13931.6	3338.3	20141.7	1192.1	255.9	121.6
<b>East Baton Rouge</b>	6753.76	12437.28	12290.39	25437.12	1904.53	1642.19	178.01
<b>East Carroll</b>	26	425	78	0	4	4	0
<b>East Feliciana</b>	666	3795	240	0	38	38	0
<b>Evangeline</b>	175	1135	2605	11230	217	190	4
<b>Franklin</b>	26	313	64	0	7	7	0
<b>Grant</b>	257	1137	871	5	239	200	0
<b>Iberia</b>	1261.48	2658.76	1889.39	51.63	811.83	354	0
<b>Iberville</b>	2687.09	11147.74	5003.24	1079.61	1287.77	787.1	16
<b>Jackson</b>	750	1795	5656	183	1706	1362	182
<b>Jefferson</b>	1128.5	9047.16	1387.16	1010.04	298.12	216.15	31.02
<b>Jefferson Davis</b>	668	1530	723	4	29	13	0
<b>Lafayette</b>	115.9	918.14	140.8	1.01	3.33	4.16	3.02
<b>Lafourche</b>	999	1650	1367	14	306	142	0
<b>La Salle</b>	51	760	220	1	4	4	0
<b>Lincoln</b>	465	2116	682	311	334	184	0
<b>Livingston</b>	468.45	138.86	455.29	2.01	100.62	58.19	0
<b>Morehouse</b>	1768.6	1238.8	2408	2874.5	345	291.1	106.5
<b>Natchitoches</b>	827	2898	3404	130	438	414	37
<b>Orleans</b>	324.7	5689.1	1547.36	188.23	435.7	189.66	18
<b>Ouachita</b>	3058.93	6621.76	3492.6	672.04	701.72	568.72	194.02
<b>Plaquemines</b>	3399	15219	6031	3945	703	692	0
<b>Pointe Coupee</b>	630	20303	2428	52665	3448	96	0
<b>Rapides</b>	1388	9738	1644	16098	783	295	40
<b>Red River</b>	132	39	264	2	134	72	0
<b>Richland</b>	124	1785	503	1	30	30	0

<b>St. Bernard</b>	3648.19	7003.9	4789.21	6971.1	830.15	600.15	73.01
<b>St. Charles</b>	5951.09	26557.85	7064.33	9916.39	1827.94	1015.87	71
<b>St. Helena</b>	237	2958	365	0	21	21	0
<b>St. James</b>	1585.26	5959.85	2787.34	20645.37	1794.51	1106.3	1437.29
<b>St. John the Baptist</b>	1120.15	2666.21	1409.65	297.06	230.3	171.02	15.06
<b>St. Landry</b>	718	2763	951	691	349	345	2
<b>St. Martin</b>	733.2	828.8	934.6	0.03	242.5	117.5	0
<b>St. Mary</b>	1397.71	9567.22	7484.51	27925.63	715.04	492.56	0
<b>St. Tammany</b>	13.8	1	0	0	6	6	0
<b>Sabine</b>	312	248	626	26	205	145	0
<b>Tangipahoa</b>	295	67	365	3	127	86	0
<b>Tensas</b>							
<b>Terrebonne</b>	2053.78	3716.48	2404.51	6.33	48.05	16.61	0
<b>Union</b>	2	91	150	0	0	0	0
<b>Vermilion</b>	1019	3195	1254	6	73	69	0
<b>Vernon</b>	58	67	39	1	17	13	9
<b>Washington</b>	1637	3418	4647	1073	864	791	56
<b>Webster</b>	1806.76	1730.87	1917.21	18.55	290.74	253.73	0
<b>West Baton Rouge</b>	991.1	1613.65	2893.19	9514.57	765.74	425.74	4
<b>West Carroll</b>	64	1619	278	0	9	9	0
<b>West Feliciana</b>	600	1058	1404	162	204	119	29
<b>Winn</b>	959	363	1762	25	811	243	82
<b>Portable</b>	72.95	405.9	141.56	45.4	27.48	8.75	0
<b>Statewide Total</b>	<b>79,243</b>	<b>263,019</b>	<b>129,863</b>	<b>279,643</b>	<b>33,299</b>	<b>19,230</b>	<b>6,929</b>

**VOC Emmissions Inventory  
2001-2003  
Major Sources**

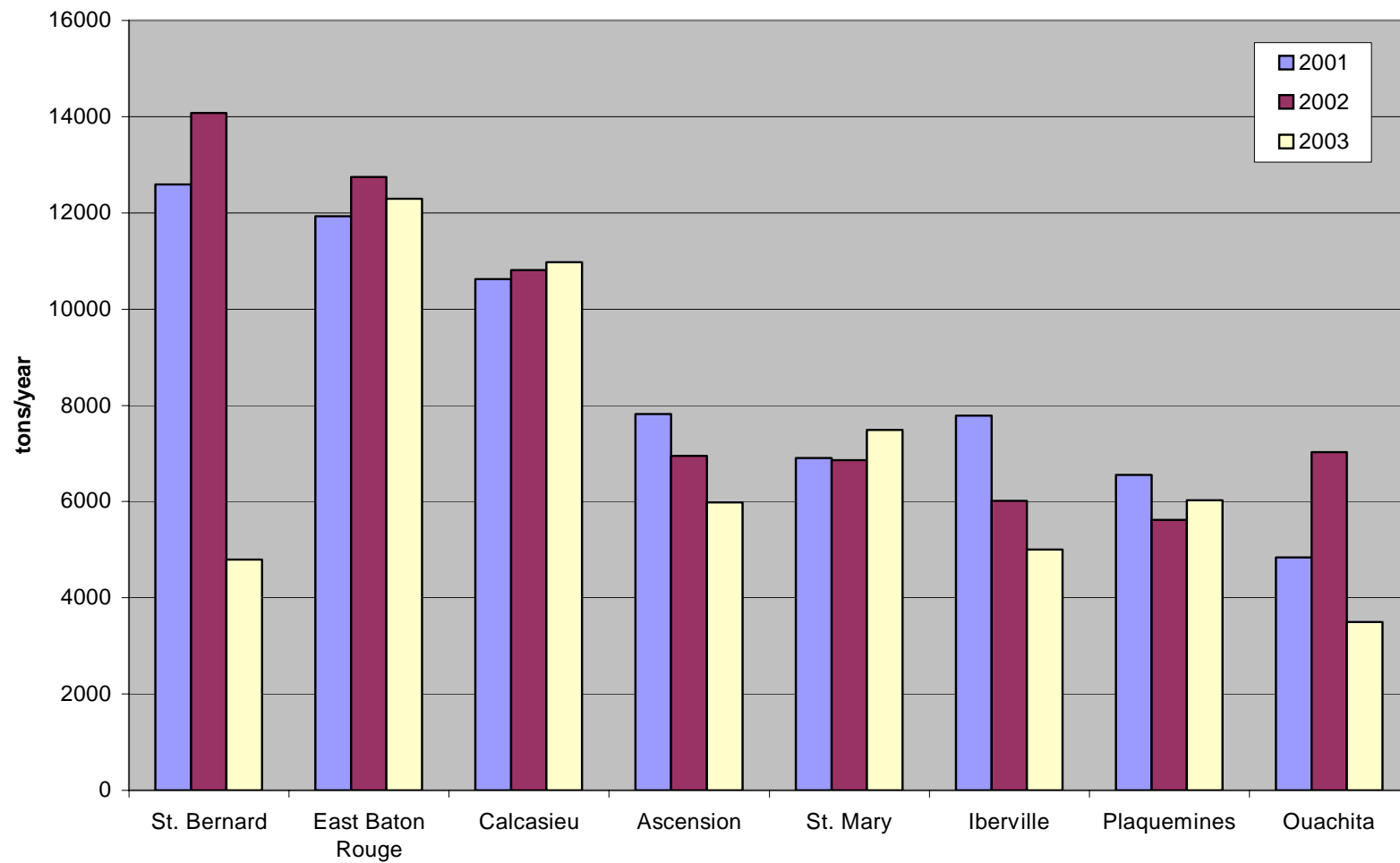


**Figure 54: VOC Emissions Inventory 2001-2003**



**Figure 55: NO<sub>x</sub> Emissions 2001-2003**

**CO Emissions Inventory  
2001-2003**



**Figure 56: CO Emissions 2001-2003**



### SO<sub>2</sub> Emissions Inventory 2001-2003

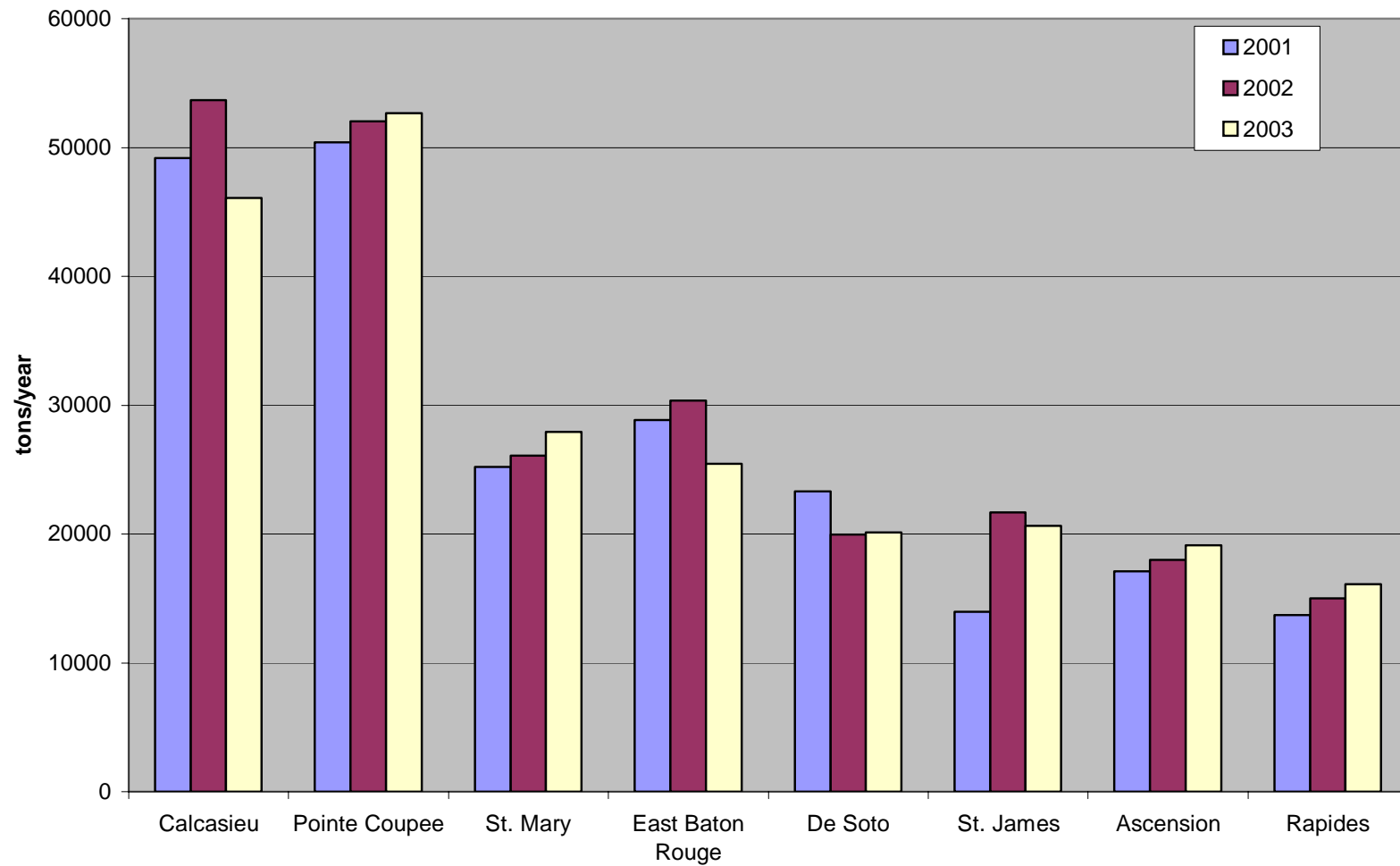


Figure 57: SO<sub>2</sub> Emissions 2001-2003

## Population of Louisiana

<b>Metropolitan Area</b>	<b>1990 population</b>	<b>2000 Population</b>	<b>% Change</b>
<b>Baton Rouge</b>	<b>561,495</b>	<b>634,032</b>	<b>12.92%</b>
<b>New Orleans</b>	<b>1,079,887</b>	<b>1,082,198</b>	<b>0.21%</b>
<b>Shreveport</b>	<b>334,341</b>	<b>350,471</b>	<b>4.82%</b>
<b>Lake Charles</b>	<b>168,134</b>	<b>183,557</b>	<b>9.17%</b>

(\*Note: The population in the list of all parishes has been increased about 5.9% from 1990 to 2000).

<b>Baton Rouge Metropolitan Area</b>	Ascension., E. Baton Rouge, Iberville, Livingston, West Baton Rouge
<b>New Orleans Metropolitan Area</b>	Jefferson, Orleans, Plaquemines, St. Bernard, St. Charles
<b>Shreveport Metropolitan Area</b>	Bossier, Caddo
<b>Lake Charles Metropolitan Area</b>	Calcasieu

## Population Of Louisiana Major Parishes and Totals

Parish	1990 Census	2000 Census
Acadia	55,882	58,861
Ascension	58,214	76,627
Assumption	22,753	23,388
Bossier	86,088	98,310
Caddo	248,253	252,161
Calcasieu	168,134	183,577
East Baton Rouge	380,105	412,852
Iberville	31,049	33,320
Jefferson	448,306	455,466
Lafayette	164,762	190,503
Lafourche	85,860	89,974
Livingston	70,526	91,814
Orleans	496,938	484,674
Ouachita	142,191	147,250
Pointe Coupee	22,540	22,763
St. Bernard	66,631	67,229
St. Charles	42,437	48,072
West Baton Rouge	21,601	19,419
Plaquemines	25,757	26,757
Louisiana State	4,205,306	4,468,976